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TECHNOLOGY DEPT.

A National Newspaper for Every Branch of the Industry

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SEP 1 1931
DETROIT

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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New Income Tax Ruling Requires Dealers to Show Income on Finance Costs

Moneys Received From Service Charges Must Be Shown in Year Credited, Even Before Debt Is Paid

NEW YORK, Sept. 7.—Dealers who are entitled to part of a financing company's service charges may have to include in their income tax returns the amount they become entitled to even before the customer pays the financing company, under an important ruling just anounced by the Internal Revenue Bureau, according to J. S. Seidman, tax expert, of Seidman & Seidman, certified public accountants.

"The general counsel of the Internal Revenue Bureau has just held," Seidman explained, "that where a dealer keeps his books on an accrual basis and the finance company credits him with a part of the service charge, the dealer must figure the credit as part of his income, for tax purposes, in the year when the credit is made. He cannot wait until the customer pays the financing company and the financing company pays the dealer.

"In the particular case that gave rise to the ruling," Mr. Seidman added, "the plan was for an automobile dealer to sell cars on a credit basis. The purchaser executed notes for the deferred payments, including a service charge. The notes were turned over by the dealer to the financing company and the financing company paid the dealer for the notes, deducting in full the service charge. However, the financing company on its books credited the dealer with a part of the service charge, the understanding being that the dealer was to be paid this credit when the customer in turn paid the notes.

"The dealer contended that he did not have to report any income as to his part of the service charge until the customer paid the notes, for until then it was doubtful whether the dealer would get anything at all. The general counsel ruled, however, that under the accrual method of accounting, the income was earned when the financing company credited the dealer with it, and that the time of payment is immaterial. The fact that the customer may never pay was likewise held immaterial, since that possibility was said to exist in all transactions between debtor and creditor."

LELAND ABANDONS SUIT FOR $6,000,000 AGAINST FORD CO.

Pontiac, Sept. 7.—Henry M. Leland announced in a letter Wednesday to 2,400 former stockholders in the Lincoln Motor Car Company, of which he was president, that he has abandoned his $6,000,000 suit against Henry and Edsel Ford.

Leland said there can be "no further recourse at law" in his four-year effort to enforce what he claims is a verbal agreement made by Henry Ford to reimburse stockholders of the Lincoln Company when the Fords acquired control in 1924. He reiterated in his letter that by the terms of the agreement he claims was made, Ford still owes the stockholders $6,000,000.

The suit, started in the Oakland County Circuit Court here, was appealed twice to the State Supreme Court and each time the Leland contention was overruled. The last ruling was in May, 1931. Because six years has elapsed since the agreement allegedly was made, Leland said a new action cannot be started.

WILLYS-OVERLAND SALES HOLD UP WELL ON COAST

Toledo, Ohio, Sept. 7.—G. V. Orr, vice-president of the Willys-Overland Pacific Company, Los Angeles, on visit to the home office where he has been in conference with various executives, discussing the company's sales plans on the Pacific Coast, points out that, while the total automobile business in California the first six months of the current year shows a loss of 23 per cent. compared with the same period of last year, Willys-Overland's sales of Willy's Sixes, Willys-Eights and trucks show an increase of 16 per cent. over the first six months of 1930.

Mr. Orr is optimistic over the future and is especially enthusiastic over the Willys Six. He will shortly return to his territory in California, where he anticipates a steady sales volume for Willys-Overland products during the remainder of the year.

MILWAUKEE'S LAST INDEPENDENT OIL FIRM ENTERS MERGER

Milwaukee, Wis., Sept. 7.—The last of Milwaukee's larger independent oil dealers passed into the control of the Cities Service Company with the acquisition by that concern of the Lindsay-McMillan Company. The Lindsay-McMillan Company, of which William A. McMillan is president, is one of the most prominent oil marketing concerns in the Middle West and has widespread gasoline distribution in Milwaukee and the surrounding territory, through more than 100 service stations and dealers.

Bulk storage plants are located here, in West Allis and Waukesha and at Calumet, Mich. Lindsay-McMillan will operate as an independent unit in the Cities Service organization, it is stated. In addition to its facilities for marketing oil and gasoline, the Lindsay-McMillan Company operates two larger modern factories, one at Milwaukee and the other at Savannah, Ga. The Milwaukee plant manufactures industrial and automotive oil products, which are sold through the United States, Canada and Europe.

STANDARD PLATE GLASS RESUMES PRODUCTION

Butler, Pa., Sept. 3.—Production has been resumed at the plant of the reorganized Standard Plate Glass Company here, with initial employment of fifty men.

The plant has been leased by the receivers to George C. Stewart and associates of Butler, who plan to begin the actual manufacture of glass late this month, giving steady employment to approximately 200 men.

August Sales May Reach 160,000; Early Returns Show 15% Drop

First Seven States to Report Show Conditions Spotty, With Declines Ranging From 40% to One Half Per Cent.

DETROIT, Sept. 7.—Retail passenger car sales in seven states—Delaware, Illinois, North Dakota, Utah, Maryland, South Carolina and Wisconsin—during August were 15 per cent. lower than during the same month last year, according to R. L. Polk & Co., who compile the official registrations throughout the United States.

Sales in the seven states representing 10.85 per cent. of the entire country totaled 18,900 new passenger cars, as against 22,128 units last year.

There is a wide divergence in the showing of the first states reported, indicating what might be termed a spotty condition of the market. North Dakota and Utah are each off 40 per cent., Delaware, 34 per cent.; Wisconsin, 21 per cent., and Illinois, 14 per cent., while South Carolina shows a loss of only 4 per cent. and Maryland a loss of one-half of 1 per cent.

Based on the figures now available it is indicated that the total new car sales for the entire country in August will be between 150,000 and 166,000 units, the Polk company estimates.

FIRST SEVEN MONTHS' CAR REGISTRATIONS

FIRST complete figures on new passenger car registrations for the first seven months of 1931, by makes and states, with comparative figures for 1930, appear on pages 10 and 11 of this issue.

SOUTH CAROLINA SETS TRUCK RATES ABOVE RAILS

Columbia, S. C., Sept. 7.—Motor freight rates for regular truck lines, under consideration of the South Carolina Railroad Commission since 1928 and discussed in frequent hearings, have been fixed at 10 per cent. in excess of rail rates for the same distances in all classifications:

The uniform motor freight rates are effective October 1 and were fixed higher than the rail rates because the commission thought the additional service, by pick-ups and store-door delivery, given by the motor freight lines, warranted the additional charge.

WEST COAST TIRE PLANTS SHOW GAIN IN SALES VOLUME

Los Angeles, Sept. 7.—Advertising campaigns and heavier replacement demands are credited with causing a higher sales volume among the Los Angeles tire factories, according to a survey of the various plants. Sales are running higher than a year ago. July was a good month for tires, and August showed gains over July. Executives anticipate September will be the largest month in 1931 from the standpoint of sales.

Goodyear Tire and Rubber Company has resumed operations after having been practically closed down for a week for vacations. Production schedule calls for 7,000 tires and 7,000 tubes daily. To date production has been slightly higher this year than 1930, while production for the entire calendar year is expected to be about the same as 1930. There are a few less employees on the pay roll than a year ago, there now being about 2,200.

Pacific Goodrich Rubber Company's July sales showed a material increase over June, bringing the total for the first seven months substantially ahead of 1930 period to that date. August showed an increase over July and the company executives expect September to be the largest month of the year.

The Pacific Goodrich plant is producing 3,000 tires and 3,500 tubes daily, slightly higher than last year. There are about 640 employees on the pay roll, showing no material change from last year.

Firestone Tire and Rubber Company is producing 6,000 tires and 6,000 tubes daily, slightly under production schedule in 1930. However, the schedule will probably be stepped up in the next two months. There are 1,300 on the pay roll, compared with 1,500 last year.

Samson Corporation, division of the United States Rubber Company, is producing 3,800 tires and 4,000 tubes daily. There are 800 employees on the pay roll.

Detroit Sees September Output Off With Sales Fairly Steady

By CHRIS SINSABAUGH

DETROIT, Sept. 7.—Collectively, the automobile industry admits there will be a falling off in production in September as compared with August. That would be expected in a normal year and the law of averages will apply in this case.

In 1930 September had the lowest output of cars and trucks the ninth month has had since prior to 1924. It was 228,606. Inasmuch as August this year was considerably lower than this, the wise ones out this way are not placing any undue emphasis on this September.

Then, too, conditions are different now since several of the larger car companies abandoned announcing new lines in midsummer in keeping with the National Automobile Chamber of Commerce pact. Giving that up hits September, in that now this season of the year finds the industry tapering off in anticipation of new lines two or three months hence.

Although production promises to fall off in September, there are indications that it is going to be a fairly good month in a sales way.

There has been a loosening of the

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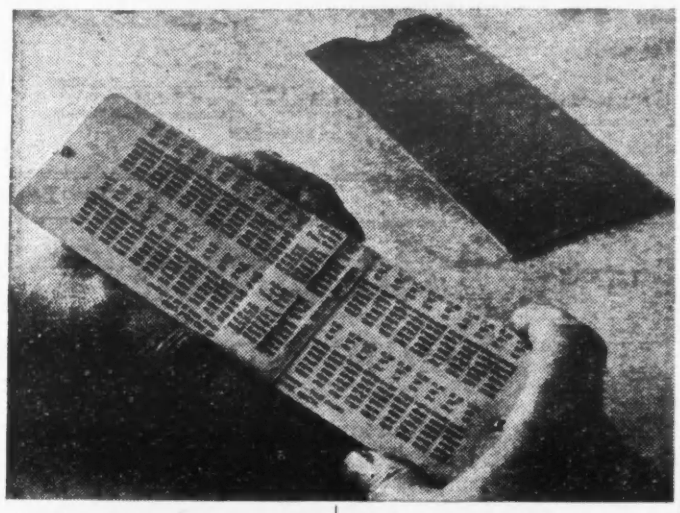
NEW PENN. LAW AIMED AT "GYP" CLUB RACKET

Philadelphia, Sept. 7.—A new state law to stop mulcting thousands of dollars from motorists in the sale of so-called automobile service contracts has just become effective. It is said this law will be the means of cleaning up the "gyp" automobile club racket. It is pointed out by Frank E. Ballantyne, general manager of the Automobile Club of Philadelphia, that motorists constantly have been losing huge sums through buying "service contracts" from that class of concerns, which agreement they believed gave them insurance on their cars. The new state law requires a state insurance department license for all companies or associations offering such insurance services.

TENNESSEE DRAFTING NEW BUS, TRUCK BILLS

Nashville, Tenn., Sept. 7.—The state highway department is drafting some new regulations for buses and trucks operating in this state, it is learned. The regulations, it is said, will provide for maximum weight, sizes and load.

New Reo Slide Rule Charts Pulling Ability of Engines



Lansing, Mich., Sept. 7.—A celluloid slide rule which tells the number of gross pounds (truck and load) that the Reo Gold Crown engine is capable of pulling under varying conditions, noting tire sizes and rear axle ratios required, has been made available to all Reo Speed Wagon owners and prospects by the Reo Motor Car Company, and is being received by truck operators as an aid in planning loads for various routes.

To illustrate the ability of the calculator, take the Reo model GD 3-ton truck with a dump body, 32-inch tires and a double reduction 11.78 to 1 rear axle ratio as an example. The gross weight of the chassis and body amounts to 7,150 pounds while the load, taking into consideration 50 per cent. overload, would weight 9,000 pounds, a total of 16,150 pounds.

Assume that is it necessary to pull several 10 per cent. grades under good road conditions. Knowing the final gear ratio and tire size, the slide part of the rule is placed so as to register with the axle ratio and tire diameter. Transmission shifts are noted first, second, third, fourth (high), With axle ratio of 11.78 to 1 and tire diameter of 32 inches, the figures within the slot under fourth (high) gear show the Reo engine capable of drawing 9,342 pounds gross up a 10 per cent. grade, but by moving the slide panel to third gear the pulling power is increased to 17,199, sufficient for the load to be carried. In first gear, however, the engine is capable of pulling a load af 61,-704 pounds up a 10 per cent. grade.

On level ground the engine is capable of pulling 575,818 pounds in first gear under favorable road conditions. All of the figures quoted have been for first-class concrete highway. Suitable deductions for macadam, cobblestones and sand are noted on the rule.

"It is easy to understand the value of this slide rule to operators who are confronted with constantly changing haulage conditions," the Reo officials state.

"The value of being able to easily calculate the peak load to be carried under different road conditions and the exact gear ratio and tire sizes necessary to exactly meet the haulage needs of every probable route on which the trucks will be operated is showing itself in the number of requests for the gauge that are being received by Reo from owners and prospects."

ALUMINUM INDUSTRIES SEES PICK UP ON COAST

Cincinnati, O., Sept. 7.—Better conditions in California and the Far West than in the middle and eastern sections are reported by R. T. Mesker, secretary of Aluminum Industries, Inc., who has been spending the last six weeks in that section, dividing his time between the company's warehouse branches at Los Angeles and San Francisco.

While automobile sales have slumped steadily, conditions in the parts industry show a healthier trend and parts jobbers are optimistic, according to Mesker.

OSTRANDER HEADS FORD PLANT IN TWIN CITIES

St. Paul, Minn., Sept. 7 (UTPS).—C. B. Ostrander is new manager of the Twin Cities plant here of the Ford Motor Company. He comes from Memphis, Tenn., where he was branch manager. He succeeds A. W. Bendick, several years manager, who resigned after a trip to Detroit. D. W. Vanderhoef continues assistant manager.

CADILLAC SALES BECOMES BRAWLEY-ATKINSON CO.

Greenville, S. C., Sept. 7.—The name of the Cadillac Sales Company has been changed to Brawley-Atkinson Motor Company.

Capital stock, officers, directors, personnel and location remain exactly as heretofore.

Germany Experimenting With Alcohol Mixed In Motor Fuel

SOME interesting points are raised in an article in a recent issue of Automobiltechnische Zeitschrift. The author, W. A. Ostwald, points out that the German automobile industry is threatened in two definite directions. First, the State Railways desire to protect themselves against the competition of road transport by the imposition on the latter of special taxes to an extent sufficient to make carriage by motor lorry unprofitable and thus force the traffic back to the railways. The State Ministry of Transportation is favorably inclined towards this plan.

The second threat lies in an effort of the alcohol distilling industry to force the motor industry to use industrial alcohol as an admixture in their regular fuel. The author states that the State Food Ministry is favorable to this scheme. The German distillery owners want to have a law passed that will make it obligatory to add to all motor fuel from 10 to 25 per cent. of alcohol bought at a high price. The state is supposed to provide the capital for additional alcohol plants, while the hundreds of millions of marks of profit are to go into the pockets of some 2,000 distillery owners.

The fundamental objection to this plan is that, while alcohol mixtures of special types have been tried in the laboratory or under special conditions, their use has not yet been developed to a point where they could be employed on a large scale.

Furthermore, even should the automobile be adapted to the use of such mixtures, only a mixture containing good, harmless alcohol could be used. Such a product can be obtained as long as the driver has the choice of buying it or not. That drivers under certain conditions are perfectly willing to try alcohol mixtures, assuming, of course, that the price is within reason, is shown by the ready sale of monopoline in Germany, and lattbenthyl in Sweden, where both products found their way on to the market without special compulsory measures being taken.

There is at present in Germany a law which compels the use of 2½ per cent. of alcohol in motor fuel. But the public prefers to pay a fine rather than use the mixture, with the result that the government is getting in money as a consequence of the existing law, although no alcohol is being sold.

It is only recently that some movement has been secured through a special arrangement with an existing company which succeeded in disposing of a large amount of alcohol mixture by making it of such a good quality and selling it at such a reasonable price that the public began to buy it voluntarily.

WICK'S GARAGE OPENS

Union City, N. J., Sept. 7.—Wick's Garage has been opened at 509-511 48th St., Union City. Carl W. Bartow, Ridgewood, is president.

THE FOLLOWING CARS ARE MORSE EQUIPPED:

AMERICAN

Cadillac V-8
Cadillac V-12
Cadillac V-16
Chrysler 8
Chrysler 8 De Luxe
Chrysler Imperial 8
Continental Motors
De Soto 6
De Soto 8
De Vaux 6-75
Dodge Bros. 6
Dodge Bros. 8
Durant 6 (614)
Durant 6 (617)
Essex 6
Hudson 8
Hupmobile 8 (C-100)
Hupmobile 8 (H-133)
Hupmobile 8 (U-133)
Hupmobile Century 8
La Salle 8
Lincoln 8
Oakland V-8

A manufacturer of high grade eights (Name on request)
Peerless 8 (Model B)
Peerless 8 (Model C)
Pontiac 6
Reo Flying Cloud 6
Reo Flying Cloud 8
Reo Royale 8

FOREIGN

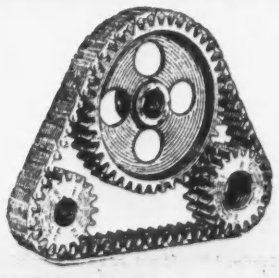
Adler
Audi
Brennabor
Fiat
Hansa Lloyd
Vauxhall
Wanderer Werke
Zschopauer

The New Reo Royale is
MORSE CHAIN EQUIPPED

Thus is added a Product of Distinction to a Car of Distinction.

MORSE CHAIN CO. Ithaca, N. Y.; Detroit Mich.
LETCHWORTH, HERTS, ENGLAND
Division of Borg-Warner Corporation

MORSE
GENUINE *SILENT* CHAINS



Classified Advertising

Classified Rates 5c Per Word

FOR SALE

One LeBLOND 26" x 10' Universal Crankshaft Pin Lathe; practically new. Price $900.00.
The Western Iron & Foundry Co., Wichita, Kansas.

SPARKS from DETROIT

Hupp Gives Figures on Eights

* * *

Johnston Joins Winningham

* * *

Fishers to Continue Contests

Chris Sinsabaugh—Detroit Editor

IN support of its claim to being a pioneer in the eight-cylinder field, Hupmobile, originally an advocate of the four, quotes some interesting figures as to the development of the eight. Says the factory:

"A striking example of the rise of eight-cylinder business as compared with the manufacture of four and six cylinder cars is shown in the production figures of 1928, 1929 and 1930. In 1928, approximately 50 per cent of the total passenger car production was of the four-cylinder type and 46 per cent. of the sixes. In this year approximately 161,000 eights were produced. In 1929 the four-cylinder cars claimed only about 37.5 per cent of the market while approximately 57.5 per cent. of the cars were of the four-cylinder type. In this year about 340,000 eights were produced. As compared with these two previous years, the eight production jumped in 1930 to approximately 382,000 units or nearly 13 per cent. of the total number of cars sold in all three classes Since 1925 Hupmobile has built eights."

* * *

THE Winningham agency, so thoroughly motorized that it seems just as important in the automobile industry as if it was a car manufacturer or a maker of accessories, announces the appointment of George Johnston as general manager. Johnston, it will be remembered, did valiant work in contacting Hudson and before that gained his automobile experience with Dodge Brothers. Winningham is carrying such automotive accounts as McCord, Gemmer and Wilcox-Rich, as well as being Public Relations counsel for the Guardian Detroit Union Group, Inc., bankers.

* * *

THE Fisher Body Craftsman's Guild will carry on. The big affair of last week when the various state's winners were brought together and the national victors selected, has become history, following which the Guild has started out with its plans for a 1932 contest. The success of the first venture has convinced President W. A. Fisher that he is on the right track in seeking to develop artisanship among the youth of the country, so he is carrying on for another year.

All those who worked on the 1931 event, including those from the Campbell-Ewald advertising agency, were taken out the other afternoon on President Fisher's yacht as recognition of the hard work they had put in in the promotion of the first year's event.

See September Production Off, With Sales Steady

(Continued from Page 1)

purse strings with the advent of fall and business as a whole given a slight stimulus by the opening of colleges and schools, which has put money into circulation through having to outfit the youngsters, that most of the summer has been tucked away in the old sock. The automobile dealer is bound to profit even though indirectly, by this.

Reports that have come to the Detroit office of Automotive Daily News of late tell of somewhat unusual activity among the dealers. Take Reo, for instance, with 230 new dealers added to its list in August, making 383 signed up since July 1.

Then there is the report just compiled by A. vanDerZee, general sales manager of Dodge Brothers, who states that for the week ending August 22 his dealers registered an increase of 99.7 per cent. in overall retail deliveries of cars and trucks as compared with the same week in 1930. This makes the seventh consecutive week that such increases have been reported. Dodge dealers also report that for this same week this year their Plymouth deliveries have increased 244 per cent. over the same week a year ago, and 4.7 per cent. over the preceding week.

The gain in retail deliveries of Dodge passenger cars also is impressive, figures for the August 22 week showing an increase of 28.3 per cent. over 1930 for the same period and 12.1 per cent. over the previous week. Truck deliveries were up 22.2 per cent. over the 1930 figures for the same month.

STEWART CHEVROLET MOVES INTO ITS NEW BUILDING

Bloomfield, N. J., Sept. 7.—The Stewart Chevrolet, Inc., is now located in its new showroom at 619-621 Bloomfield Ave. The new showroom is elaborately furnished with offices and a rustic interior built in, so that, in appearance, the prospective purchaser can visualize his new car as it would look outdoors. A much larger service department is included in the new quarters. One of the features of the shop is a full-size paint shop for refinishing and retouching of bodies. The used car department will remain at the present location, 20 Bloomfield Ave.

NEW ARMSTRONG DEALER

Bergenfield, N. J., Sept. 7.—Roepcke's Garage, at 90 Church St., has been appointed local distributor for the Armstrong Tire Company. Recently the concern installed a Weaver brake testing machine.

NEW SERVICE CONCERN

Newark, N. J., Sept. 7.—The General Auto Service Company, Inc., has been organized by Isabella Mandel, Harriet Bosch and Charles Trachtenberg, all of Newark.

Finds Service Salesmen Best on Commission Basis

Philadelphia Oakland and Pontiac Distributor's Station Staff, Halved, Helps Increase Volume Monthly Under Plan

UNTIL the middle of last February, Bushong Motors, Inc., Oakland - Pontiac distributor, Philadelphia, with service station at 31st and Fletcher Streets, were employing four service salesmen on a drawing account. At that time the labor sales were averaging about $3,000 a month. Today, with half the service sales staff, or only two men, labor sales are averaging around $4,200 monthly and the service salesmen are keeping their eyes open to sell all kinds of service and repairs, as well as parts and accessories.

That is largely because they were placed on a straight commission basis at the time mentioned and under this plan are quick to recognize opportunities for selling that did not occur to them while they were on a drawing account. In other words, they are now "on their toes" all the time, and benefit by what they are accomplishing day by day. It's a case of swim or sink, and, judging from results, the men are swimming.

W. Hilliard, service manager, who put the plan into operation and is said to be a pioneer in the field of placing service salesmen on a strictly commission basis, said:

"Not only has the volume of labor sales been substantially increased by the plan with only half the number of service salesmen we formerly were using, but the total volume of service business and parts and accessories sales has been increased each succeeding month since the commission basis was established. This has been the case right up to September 1, from February.

"Our service salesmen receive 7 per cent. commission for selling labor and parts and 10 per cent. for sales of accessories, of which we have a small display on the service floor. The men now are alert to sell not only the things they previously sold, but also preventive maintenance, fender straightening work, spark plugs and so on. When we had four service salesmen it was sometimes a problem how to keep them busy every moment. Now we have no such difficulty and the results are much more satisfactory all around."

Another plan involving the service salesmen, which was put into operation shortly after their number had been reduced by half and which has been continued, although less intensively than when work in the service station was slower, is a telephone call campaign. The service salesmen make the telephone calls. At the start thirty calls a day were made, each service salesman making fifteen. Later, when service and repair work regained its stride, the total number of daily calls was reduced to twenty, and at present, with service business constantly increasing, these calls have been cut to a total of ten a day. It is the intention to step up the number of calls proportionately as service work falls off, but there is no present indication of this contingency arising.

The telephone campaign is based principally on a special plan of "Three-Point Service," whereunder a customer, not for a limited time, but just as long as he is the owner of an Oakland or a Pontiac, is entitled to a positively free monthly tune-up of the motor. This special service consists of (a) cleaning and adjusting distributor points, (b) setting the timing, (c) cleaning and adjusting spark plugs, adjusting carburetor and tightening cock.

This forms an extra and unusual contact with the customer, who ordinarily is in a pleasant mood when he comes in for his free motor tune-up, which has proved a goodwill builder. The examination of the motor for the three-point service operation develops directly such business as thorough motor overhauling and valve work and, because of the contact, sometimes leads to orders for various other kinds of work found necessary on the car.

Features One-Day Sales

ONE DAY ONLY

We Submit the Following Bargains to Close Out August Business

REMEMBER, THESE PRICES PREVAIL, AUGUST 31 ONLY!

1930 Buick Coupe — In excellent condition in every respect. Save $200. **$695**

1930 De Soto 8 Rdstr. — A smart sport car in perfect shape. **$695**

1930 Essex Special — Town Sedan. Second series, 1930 model. Double fender wells with trunk rack in the rear. Looks and runs like new. **$495**

1928 Chevrolet Coach — A light economical car, equipped with General tires. A1 condition. **$185**

1929 Oldsmobile Coach — Tires, paint, motor, all in good shape. **$395**

1929 Nash 400 Sedan — Small 6. Actual mileage 11,600. An ideal family car. **$395**

1929 Nash Collapsible COUPE. Twin ignition 6. Sold new for over $2000. **$695**

1930 Chrysler — 70 Coupe. 6 wire wheels and trunk rack. Save $200. **$795**

1929 Chrysler 75 Rdstr — With a handsome color combination of blue and cream, wire wheels. Many more extras. **$625**

1928 Essex Coach — In fair condition. **$65**

1928 Studebaker Regal COMMANDER SEDAN. Only one owner. **$385**

25 OTHER FINE USED CARS

Ranging in Price From $200 to $1500. All Priced Proportionately Low for This One-Day Sale

REMEMBER, ONE DAY ONLY!

INTERNATIONAL MOTOR CAR CO.

579 MAIN STREET Tel. 6-1826

Open Evenings Till 10

HUDSON-ESSEX DEALER

Open Air Lot on Main and Norwood Sts. Opposite Salesroom

ONE-DAY SPECIAL SALES have been found an effective method of moving used car stocks by the International Motor Car Company, Hudson-Essex dealer of Springfield, Mass. The above reproduction of one of the concern's ads shows how it is done

Meet the Sales Chiefs

FRANK R. VAN RENSSELAER, vice-president in charge of sales and secretary of the American-La France and Foamite Corporation, has been connected with this organization for twelve years. He has been in initimate contact, therefore, with the production and distribution of American-La France motor fire apparatus, Alfco marine engines and Foamite fire-extinguishing equipment.

From 1906 to 1913 Mr. Van Rensselaer was employed by the Union

Pacific Railroad and Pacific Fruit Express Company at Omaha, Cheyenne and Denver. For the following four years he was engaged in the ice and cold storage business in Denver, until the war broke out.

For more than two years he served in the United States Army as captain and major in the quartermaster corps.

In July, 1919, he joined the affiliated Pacific company of the American-La France Fire Engine Company, and served as vice-president until 1921. He was then transferred to New York city as export manager of the parent company. Promotions continued as Mr. Van Rensselaer's ability was further recognized, and in 1924 he was transferred to the general offices at Elmira, N. Y., as assistant to the vice-president and treasurer. In 1927 he was elected secretary, and three years later was appointed vice-president in charge of sales, retaining the office of secretary.

Two large separate and distinct sales forces operate under Mr. Van Rensselaer's jurisdiction. One involves the sale of motor fire apparatus to municipalities, the other, fire extinguishing equipment to industry and all other classes of trade. Numerous branch offices and distributors, as well as all phases of sales, service, advertising and export business are under his supervision.

As secretary he has charge of credits, collections, taxes, legal matters, insurance and office supervision..

Mr. Van Rensselaer is also vice-president, secretary and director of the sales company, American-La France and Foamite Industries, Inc.; vice - president of American - La France and Foamite Corporation (Pacific), and vice-president and director of La France Fire Engine and Foamite, Ltd., Toronto, Canada. He is a native of Fort Worth, Tex.

Transportation Development Traced by Paul A. Walker

OKLAHOMA CITY, Okla., Sept. 7. —Paul A. Walker, chairman of the Corporation Commission of the state of Oklahoma, writes the following interesting article on the development of transportation:

Transportation itself, or its development, is a fair index of the progress of any people. The advancement a given people, or nation, makes in transporation is a fair measure of the position and advancement of that people.

The most powerful nations have been those which had the greatest freedom and facility of commercial transportation.

The localities best circumstanced by favorable or cheap transportation grow and develop, while places less favored stagnate or decline.

Centers like Chicago, especially favored with transportation facilities, obtain relatively low transportation charges, which induce the location of large industries. This impetus to trade causes other and larger industries to build and multiply, until we have the great cities which continue to become greater, while those less favored by circumstances remain inconsequential.

Early American development of population and industries hugged the Atlantic seacoast because of lack of transportation into the interior. Commerce chiefly was by water and with the mother country. Such roads as there were followed the old animal paths, which also were the Indian trails.

There was early realization that any national expansion or development must be dependent upon transportation and transportation systems. Gen. Washington, realizing that without easy means of access between the country beyond the Alleghanies and the seaboard there would probably be built up at least two rival nations, set about planning highways and water communications between the two sections. His passion for means of transportation into the West led to the building of canals and eventually to turnpikes.

The location of the old Cumberland road came from suggestions of Albert Gallatin, Jefferson's secretary of war, and this highway was effectuated by an act of Congress of 1806, signed by President Jefferson and supplemented by later acts of Congress, providing for building of public roads from sale of public lands. The road extended west through Columbus, Indianapolis and Vandalia to St. Louis, and now is the National Old Trails road from coast to coast, 3,096 miles from Washington to Los Angeles, eventually to be paved from the Atlantic to the Pacific.

The expansion of the country went hand in hand with the development of roads and water transportation. The development of water power and manufacturing in the East brought in foreign labor and drove agriculturists into the Far West even faster than adequate transportation developed.

The excessive cost of transportation in the War of 1812 further stimulated action for good roads and canals. The early navigation of the Ohio and Mississippi rivers was inadequate and woefully slow. The investments in canals was more or less disastrous because turnpikes and railroads came along soon enough to cut into the business and take away the profits.

Just prior to the Civil War the state of Pennsylvania abandoned canal building and sold out to the railroads for about a fourth of the cost of the canals. In the four states of New York, Pennsylvania, Ohio and Indiana canals aggregating 1,417 miles in length and costing in excess of $32,000,000 have long since been abandoned.

The coming in of the steam railroad about 1825 met with bitter opposition. All kinds of fanciful arguments were advanced as to damages to the country, to man and beast, to the communities, to farmers, teamsters, tavern keepers and others.

From the pages of 1833 we find arguments on behalf of the railroads which sound strangely modern by advocates of motor bus and truck and airplane travel, as illustrated in the following quotation:

"When we seriously consider the

(Continued on Page 4)

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The Importance of Our Industry

SOME weeks ago Col. Leonard Ayres, the well known economist of Cleveland, remarked in a statement to Automotive Daily News that a revival in activity by the automotive industry would do more to chase the depression than almost anything that could happen. Col. Ayres cited the far-reaching effects of automotive purchases, going to dozens of industries and sources of raw materials as the reason for the revivifying effect of increased activity in our field.

In a recent statement by Alvan Macauley, president of the National Automobile Chamber of Commerce and of the Packard organization, he spoke to the same effect. He urged people to put their "unemployed dollars" to work and suggested automotive purchases as the most beneficial way of doing this.

"Few would hesitate to buy motor cars," said Mr. Macauley, "if all knew how country-wide the immediate effect would be. In 1930 the motor car ranked first in the consumption of steel bars and sheets, nickel and lead and used 51 to 82 per cent. of all the malleable iron, rubber, upholstery leather and plate glass. It also used 18 per cent. of our hardwood lumber, 17 per cent. of our aluminum, nearly 16 per cent. of our steel, 15 per cent. of our copper, 14 per cent. of our tin, 26 per cent. of all leather, 10 per cent. of our cotton (and cotton grows in fifteen states) and a large percentage of scores of other commodities, including wool, curled hair, paints and lacquers, all requiring labor in their production."

If you would realize further, how necessary to a general revival of business, renewed activity in the automotive field is, just imagine what would happen if our industry should suddenly go forward at the 1928 or 1929 rate. Almost every other industry in the country would instantly feel the effects; the depression would become a matter of history so fast that it would be forgotten by Christmas. We cannot expect a miracle like that, but we can work for the renewal of automotive contributions to industry and business in general.

Sliding Tops

IN the scramble for something new to offer motor car buyers, it is odd that some American maker has not tried out the sliding top for closed cars. Under the name of "sunshine saloon" and various other more or less catchy designations, this construction is widely popular in England.

The sliding top is simple enough. It is a section of the roof, with a convenient handle underneath, whereby the driver slips the segment back and has nothing above him but the sky.

Englishmen are funny that way. They just must have their open air, even though most of the time it is filled with flying raindrops. Sunshine saloon, is a somewhat academic name for this type of construction, when the unregenerate British climate is considered. However, the Britisher likes his sliding roof.

It is a question whether this form of body design would appeal to Americans. With a climate far more equable than the English one, during the summer, the sliding roof would have more practical value. It would give our open air fiends a close approach to the delights of driving with the top down in a sports car and yet would give the comfort and protection of the closed body, which feminine America never would give up. It would seem as if it might be worth some enterprising manufacturer's while to try out the appeal of the "sunshine" roof on a sedan or coach model. It might be one of those things that would catch on a run to heavy production and the experiment would not be tremendously costly.

Transportation Development Traced by Paul A. Walker

(Continued from Page 3)

enormous expenditure, which has been incurred to establish these roads (meaning broad highways), the numerous buildings and farms which are contiguous to them, the well-constructed bridges by which we cross every stream and river throughout the empire, how conveniently they stretch through every town and village of the slightest note, and how much the value of property in those towns and villages depends upon direct and convenient communication with other districts, we cannot help confessing that the establishment of new lines of roads (the railroads) in different directions, must, for a time, have the effect of depreciating the value of immense property, and producing excessive inconvenience to many individuals, and to many estates.

"It is true that the present roads may still exist, but where will be the stage-coaches and stage-wagons—where the necessity of expending the same money in repairs—what will become of the numerous taverns already erected for the convenience of travelers, and how serious the inconvenience to the inhabitants of the country residences, and to farmers, by those alterations?

"Again, when we consider the great outlay that has been made in the establishment of canals for the conveyance of merchandise, we are actually struck with the loss of property which the canal proprietors must suffer, by the construction of new lines of road for railway conveyance."

As turnpikes displaced the pack trains and railroads displaced the canals and plank roads, the electric roads threatened and actually cut into the short-haul business, especially of the railroads, until many steam railroads, in self-defense, found it advisable to electrify certain of their operations and especially those for commutation services, an example which may profitably be patterned after by the railroads generally for such service as they are ultimately to retain.

As the electric railroads supplanted the steam railroads for interurban service, they, in turn, had to give way to motor vehicles, private automobiles, buses and trucks.

As the canals and turnpikes opposed them, so now steam and electric railroads are fighting encroachment of motor vehicle competition. The growth of motor vehicle transportation has been phenomenal. While its principal inroad on the business of the railroads has been for short hauls, it is by no means confined thereto. It extends from coact to coast and from Canada to the Gulf for both haulage of persons and articles of commerce.

The big factor in the development of bus and truck transportation has been the building of hard-surfaced roads, and the greatest danger of handicap to development of the bus and truck industry is damage to the roads from such motor vehicles and inconvenience to private travel through virtually crowding of persons off the highways by these vehicles.

Excessively heavy and wide freight vehicles, sometimes moving in long trains, create such hazards for the private automobile as to discourage travel and create agitation against buses and trucks. Already adverse legislation has manifested itself.

Especially for long hauls, aviation is bound to cut into the business of the railroads and will, as time goes on and as safety of air travel becomes more certain, be a continuing large factor in competition for passenger traffic. Its time saving is inestimable and it is a factor which all students of transportation recognize.

Out of the competitive situation among the railroads, motor vehicles and airplanes must eventually come some unity of transportation systems. Only in this manner can such parts of these several means of transportation as deserve to survive be saved.

The railroads can do much to hold business through elimination of duplication of services, through electrification and through greater speed, which for principal transportation service for passengers must eventually approximate something like present airplane time.

Only through co-ordination with motor vehicles and airplanes, and possibly also pipelines, can there be a satisfactory solution of the transportation problem. The transportation system of the future must be a combination of the motor vehicle, railroad and airplane service.

NEW SUPPLY CONCERN

Jersey City, N. J., Sept. 7.—The Union Auto Supply and Service Station, 414 Bergen Ave., Jersey City, has been organized by Samuel Houston and William F. Browne, both of this city.

COMING EVENTS

SEPTEMBER

7- 9—**Kansas City, Mo.** American Society of Mechanical Engineers, general meeting.
8-17—**Utrecht, Holland.** Utrecht Fair, bus and truck show.
9-10—**Toronto, Can.** National Association of Show Managers, convention.
11—**Charleston, W. Va.** West Virginia Motor Transport Association, meeting.
16-17—**Atlantic City, N. J.** National Petroleum Association, annual meeting. Hotel Traymore.
17—**Chicago, Ill.** Steel Founders Society, convention.
20-26—**Springfield, Mass.** Eastern States Exposition.
21-25—**Boston, Mass.** American Welding Society, meeting. The following societies will participate: American Society for Steel Treating, American Welding Society, Iron and Steel Division, A. S. M. E.; Machine Shop Practice Division, A. S. M. E.; Iron and Steel Division, A. I. M. E.; Institute of Metals, A. I. M. E.
28-29—**Atlantic City, N. J.** National Association of Motor Bus Operators, fifth annual meeting, Hotel Ambassador.
26-Oct. 2—**Atlantic City, N. J.** American Electric Railway Association, annual meeting.

OCTOBER

1-11—**Paris, France.** International Automobile Salon.
2- 3—**Houston, Tex.** American Institute of Mining and Metallurgical Engineers, petroleum division meeting.
7- 8—**Detroit, Mich.** Society of Automotive Engineers, national production meeting.
12-13—**Pittsburgh, Pa.** Pennsylvania Automotive Trades Association, convention.
12-16—**Chicago, Ill.** National Safety Council.
14-16—**Pittsburgh, Pa.** Society of Industrial Engineers, convention.
14-15—**Albany, N. Y.** New York Automobile Dealers Association, convention.
15-17—**Pittsburgh, Pa.** American Gear Manufacturers Association, convention.
15-24—**London, England.** International Motor Exhibition, Olympia Hall.
19-22—**Chicago, Ill.** National Hardware Association, convention.
22-28—**Prague, Czecho-Slovakia.** International Automobile Exposition.
22-28—**Prague, Czecho-Slovakia.** International Automobile Exposition.
23—**New York City.** American Iron and Steel Institute, convention.
27-28—**Chicago, Ill.** American Railway Association, Motor Transport Division, meeting.

NOVEMBER

Copenhagen, Denmark., Motorcycle, truck and bus exposition.
5-14—**London, England.** International Commercial Motor Transport Exhibition, Olympia Hall.
10-12—**Chicago, Ill.** American Petroleum Institute, annual meeting, Hotel Stevens.
28-Dec. 9—**Brussels, Belgium.** Automobile Salon.
30-Dec. 4—**New York City.** American Society of Mechanical Engineers, annual meeting.

DECEMBER

7-12—**Atlantic City, N. J.** Motor and Equipment Association and National Standard Parts Association, Joint Trade Show.
9-11—**Atlantic City, N. J.** American Institute of Chemical Engineers, meeting.

JANUARY

11-14—**Detroit, Mich.** American Road Builders Association, twenty-ninth convention and show.
9-16—**New York City.** National Automobile Chamber of Commerce, National Automobile Show.
30-Feb. 6—**Chicago, Ill.** National Automobile Chamber of Commerce, National Automobile Show.

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Controllable and Automatic Aircraft Propellers

The following, in part, is a paper presented before the twentieth National Aeronautic Meeting of the Society of Automotive Engineers, Cleveland, O., by D. A. Dickey and Lieut. O. R. Cook, material division, United States Air Corps, Wright Field, Dayton, O.

The terms "adjustable," "variable," "controllable," etc., have been used rather loosely and interchangeably. It is advantageous to assign specific meaning to the terminology, and the definitions given have been selected for particular reasons. All terms refer to pitch (blade angle) adjustment or control, the advent of propellers of controllable size (width or diameter) seeming too remote for present consideration.

Propellers whose pitch cannot be changed during flight, but which, when the engine is not running, can be adjusted—either on or off the engine—are classified as "adjustable propellers." Practically all of the detachable blade propellers now in general use in America fall in this class. With a wrench and a suitable protractor the pitch of the blades can be "adjusted" when not in operation.

A "controllable propeller" is one the pitch of which can be changed during flight as the result of intentional manipulation on the part of the operator each time a change of pitch is effected, the extent of change being either predetermined or continuously controlled by the operator. The power effecting the change of pitch may be derived either from the operator, or the engine, or from some other source, the operator merely determining the time and extent of the change and manipulating the control mechanism in the latter cases.

An "automatic propeller" is one whose pitch is changed while in flight as a result of a change of conditions in response to which the propeller controlling and operating mechanism is constructed to function without attention or manipulation on the part of the operator in regard to the time or extent of the change. The fact that the range or extremes of operation may be capable of adjustment by the operator while in flight or by a mechanic when the engine is not running does not affect the classification of the propeller.

Cargo airplanes are generally limited to loads with which they can take off and climb, and not to loads which they are able to satisfactorily carry once in the air. Therefore, a controllable of only two positions, viz: take-off pitch and normal pitch, should increase the returns by increasing possible pay load. Were the propeller provided with a cruising pitch position, a further economy could be effected in the use of fuel. This, however, should not be secured at the sacrifice of high speed (normal) pitch, as all airplanes at some time or other may seriously need a high speed pitch setting. Hence, a three-position propeller is quite acceptable for this class of airplane and more to be desired than one or two positions.

The case of a pursuit or combat airplane is entirely different, however. The demands of a combat plane on a changeable pitch propeller include all conditions from steep climbs to vertical dives, with maximum performance available under all conditions. The pilot of a single-seater combat airplane is a busy man during an engagement. An automatic propeller is needed for this type of airplane; a propeller that corrects its pitch to suit changing conditions, and accomplishes this change with but very little lag behind the advent of a new condition. The value of such a propeller is still further enhanced if its governor or control mechanism is capable of such adjustment while in flight so that the pilot can select the range of operation or the condition of response which he desires.

All of the propellers falling within the scope of this article may be classed somewhere between these two extremes; the one extreme being the strictly limited controllable, the other the full automatic with governor adjustment while in flight.

The introduction of controllable and automatic features into the field of propeller design adds many difficult problems which have not readily been solved by drawing upon experience gained in other fields of engineering. Some typical problems are:

(a) Design of, material for, and fabrication of an anti-friction bearing wihch is light, comparatively small, and at the same time sufficiently strong to withstand both the tremendous centrifugal force generated by the rotating blades, and the shock loads due to torque variation in the engine.

(b) A control device which is light in weight and positive in action, the parts rotating with the hub being so disposed that the balance about the axis of rotation of the propeller is preserved.

(c) For those actuating mechanisms which require a running connection between cockpit controls and the propeller, a running connection which is light, rugged, and durable.

(d) Modification of the engine.

The biggest stumbling block in the devolpment of controllable propellers seems to be the lack of materials light enough in weight and of sufficient strength to permit the designer to get the propeller within the weight and space limitations established to date.

At the present time the material division of the air corps is following the development of eight distinct types of controllable and automatic propellers, including one of its own design.

The first controllable propeller in which the army took a definite interest was that made by Mr. Seth Hart and Mr. Robert I. Eustis. The essential features of this type propeller were as follows: Wood blades

(Continued on Page 9)

Brakes for Truck Use

By G. B. INGERSOLL
Chief Engineer, Federal Motor Truck Company

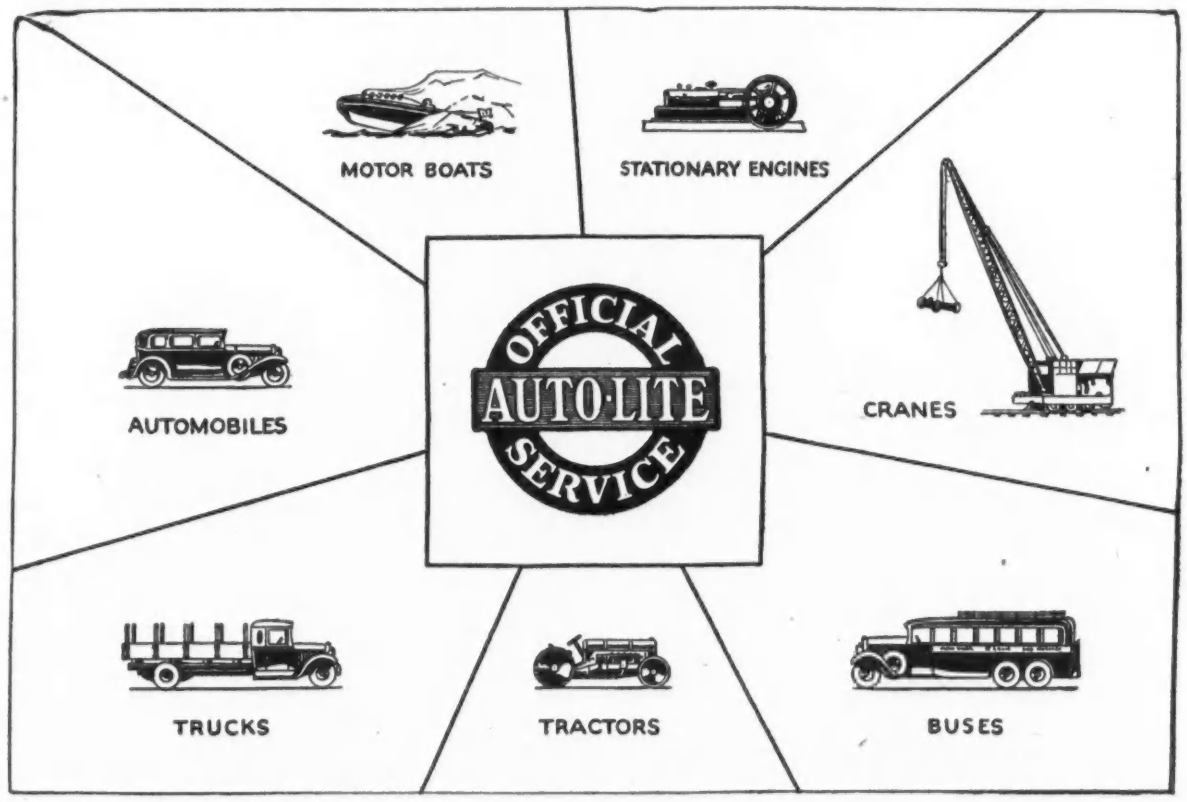
Considerable development has been done in the past on truck brakes, and the progress in the next few years will be more marked. A great deal more development work must be done in the design of brakes in order to enable them to efficiently operate in the increased service which will follow in the expansion of the motor truck industry.

In times of depression there is a tendency to increase by use of nominal carrying capacity of trucks several times over. This condition has always been present in motor truck industry, but in times like these this practice is practically unlimited. The recourse of engineers in these circumstances in the past has been to keep on increasing the size of the brakes, but we have reached a limit now in size developing, so that the next step will be more intense development of the efficiency of brakes.

A great majority of truck brake installations today are either of the straight mechanical, air or hydraulic type. The extreme efficiency of hydraulic brakes, together with the simplicity of their installation and economy of manufacture will undoubtedly work for the more universal adoption of hydraulic brakes as the leading type. Especially will this be found to be true in six-wheel truck installations, as simplicity of the conduit system for connecting the pressure developing units with the friction engaging means renders this type of installation ideal for this fast developing phase of the industry.

Air operated brakes are finding considerable favor at the present

(Continued on Page 6)



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TRUCK BRAKES

(Continued from Page 5)

time in extra heavy duty truck service. However, the intense development that is being given the subject of hydraulic installations at the present time will surely result in a more efficient hydraulic brake than that which we are now using. This will permit this type of brake to be extended over a greater range of truck capacity, which, at the present time, is slightly limited. When this is done, the economy of manufacturing of hydraulic brakes, plus their increased efficiency, will enable such brakes to predominate and thus displace air brake installations in the heavier service.

Ease of operating ability is one of the main essentials of any ideal braking system. The use of increased line pressures has permitted the hydraulic brake to be satisfactorily used on trucks of increased capacity, with very easy pedal pressures and efficient operating ability.

On the large truck units, auxiliary booster means are usually employed as an auxiliary to lessen the work of the operator. This booster unit is usually operated by vacuum from the manifold of the engine, and similar ease of operation is accomplished in air brake installation by the storage if compressed air developed by air compressors driven from the motor.

While these methods of acquiring ease of operation are quite satisfactory, they are quite expensive and have the disadvantage of being limited in their operation whenever the motor is not running. For the lighter trucks, in the future this auxiliary pressure will be developed through suitable linkage incorporated in the hydraulic master cylinders and the auxiliary booster when necessary will be developed by combined electro mechanical means incorporated in the master cylinders. Such construction will permit the efficient operation of the brakes at all times and without dependence on the operation of the motor.

The tendency of automotive equipment is more and more towards automatically operated units. No operator likes to make mechanical adjustments, and the adjustment of brakes is an especially disagreeable one. Not only does it consume time and expense, but there is a considerable danger during the time when the brakes are faulty and when no time is taken for complete and proper adjustment. The adjustment of brakes should and will be entirely automatic in the future. Brakes of this kind have been designed and successfully operated in exhaustive tests and without question this should be one of the big developments of the future in truck brake installations.

Much trouble has been experienced in the past due to so-called inadequacy and inefficiency of brake lining. Most of the trouble of this nature experienced with brake lining has been due to the abuse of brake linings and improper brake design. It is entirely possible with the proper design of brakes to obtain 100,000 miles of service without trouble even with the ordinary and cheaper types of brake lining when the lining is given a fair chance in operation by the proper design of brakes.

In order to accomplish this, the brake lining must engage the brake drum with equal pressure throughout the total circumference of the brake drum. This will call for the development of a single brake shoe, operating like a piston ring, always maintaining a true circle and developing equal pressure throughout the circumference of the engaging surface of the brake drum. With this type of brake shoe design in many of the lighter capacity trucks, the sizes of the brakes could be actually decreased, resulting at the same time in greater efficiency and longer life. It is a well-known fact that, in many brake installations, only a small proportion of the total area of the brake lining is used, this resulting in very high unit pressures that soon destroy the lining as well as resulting in continuous delays from the necessity of frequent brake adjustments. The proper design of brakes will, in the future, permit successful operation with so-called inferior lining even as now, in many installations, improperly designed brakes result in inefficient and expensive operation with the best of brake lining material.

The structure of brake drums should be of a crystalline nature and, therefore, use of cast iron drums will become pretty much universal on the lighter capacity of trucks. On heavy duty chassis these will be cast in many instances integral with wheel assemblies and on the lighter capacity units the use of cast metal for the engaging surfaces will be secured by the use of a thin cast iron lining pressed into a pressed steel drum housing.

With these developments, hydraulic brake systems will become the most easy and efficient operating unit of the motor truck vehicle and one which will be produced very economically and will provide continuous and successful operation over a long period of time.

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Auburn 8-98	3916	127-136	Lyc	Dole	L	8	3 x4¾	268	*5.26	28.8	98@3400	*Alum	5	Pur	—	Sch	No
Austin	§1130	75	Own	——	L	4	2.2x3	45.6	5.1	7.8	13@3000	Alum	2	—	—	Til	No
Buick 8-50	3170	114	Own	Bish-Bab	O	8	2⅞x4¼	220.7	4.75	26.45	77@3200	CI	5	AC	AC	Mar	AC
Buick 8-60	3795	118	Own	Bish-Bab	O	8	3 1/16x4⅝	272.6	4.63	30.02	90@3000	CI	5	AC	AC	Mar	AC
Buick 8-80	4255	124	Own	Bish-Bab	O	8	3 1/16x5	344.8	4.5	35.12	104@2800	CI	5	AC	AC	Mar	AC
Buick 8-90	4340	132	Own	Bish-Bab	O	8	3 1/16x5	344.8	4.5	35.12	104@2800	CI	5	AC	AC	Mar	AC
Cadillac V-8	4645	134	Own	Yes	LV	8	3⅜x4 1/16	353	5.35	36.45	95@3000	CI	3	AC	Gas	Own	No
Cadillac V-12	5480	140-143	Own	Own	O	12	3⅛x4	368	5.5	46.9	135@3400	CI	4	AC	Gas	Own	No
Cadillac V-16	6100	148	Own	Yes	O	16	3 x4	452.0	5.50	57.5	165@3400	CI	5	AC	Gas	Own	No
Chevrolet	2685	109	Own	No	O	6	3 3/16x3¾	194.0	5.00	26.3	50@2600	CI	3	—	AC	Car	AC
Chrysler 6	2850	*175¾	Own	Yes	L	6	3¼x4⅜	217.8	5.35	25.35	70@3200	*Alum	4	—	AC	Sch	Yes
Chrysler 8	3365	*186 1/16	Own	Yes	L	8	3⅛x4¼	260.8	5.30	31.25	88@3400	*Alum	5	Yes	AC	Str	Yes
Chrysler 8 De L.	——	187 1/16	Own	Yes	L	8	3¼x4¼	282.1	5.20	33.80	94@3400	*Alum	5	Yes	Yes	Str	Yes
Chrysler Imp. 8	4725	*211	Own	Yes	L	8	3½x5	384.6	5.20	34.2	125@3200	*Alum	9	Yes	AC	Str	Yes
Cord (Fr. Wh. D.)	4620	137½	Lyc	——	L	8	3¼x4½	298.6	5.25	33.8	115@3300	*Alum	5	Pur	AC	Sch	No
De Soto Six	2695	*169 5/16	Own	Yes	L	6	3¼x4⅛	205.3	5.35	25.35	67@3200	*Alum	4	—	AC	Car	Yes
De Soto Eight	3025	*177	Own	Yes	L	8	2⅞x4¼	220.7	5.40	26.45	77@3400	*Alum	5	—	AC	Str	Yes
De Vaux 6-75	2810	113	Hall	Dole	L	6	3⅜x5	214.7	5.41	27.34	70@3400	Alum	4	AC	Ste	Til	AC
Dodge Six	2820	114¼	Own	Yes	L	6	3¼x4¼	211.5	5.20	25.35	68@3200	*Alum	4	No	AC	Car	AC
Dodge Eight	3174	118¼	Own	Yes	L	8	3 x4¼	240.3	5.40	28.80	84@3400	*Alum	5	Pur	AC	Str	AC
Durant 610	2780	112	Con	Bish-Bab	L	4	3⅞x4¼	200	4.80	24.0	50@2800	*Alum	3	AC	AC	Til	Til
Durant 612	2820	112	Con	Bish-Bab	L	6	3¼x4	199	5.32	25.4	71@3300	*Alum	4	AC	AC	Str	AC
Durant 614	3010	112	Con	Bish-Bab	L	6	3¼x4	199	5.32	25.4	71@3300	*Alum	4	AC	AC	Str	AC
Durant 619	2710	109	Con	Bish-Bab	L	6	3¼x4	199.0	5.32	25.4	71@3300	*Alum	4	AC	AC	Til	AC
Essex Super Six	2750	**113	Own	——	†L	6	2⅞x4½	175.3	5.80	19.8	60@3300	Alum	3	—	Ste	Mar	AC
Ford A	2375	103½	Own	——	L	4	3⅛x4¼	200.5	4.22	24.03	40@2200	Alum	3	—	—	Zen	—
Fr'klin S 15 Trans.	3930	125	Own	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Fr'klin S 15 Trans.	4130	132	Own	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Fr'klin S 15 De L	4220	132	Own	Bish-Bab	*O	6	3½x4¾	274	5.30	29.4	100@3100	*Alum	7	AC	AC	Str	AC
Graham Bros. 6	3100	113	Own	Yes	L	6	3⅛x4½	207	5.45	23.4	70@3200	*Alum	7	—	AC	Sch	Yes
Graham Std. 6	3265	115	Own	Yes	L	6	3¼x4½	224	5.45	*25.35	76@3400	*Alum	7	—	AC	DL	Yes
Graham Spl. 6	3330	115	Own	Yes	L	6	3¼x4½	224	5.45	25.35	76@3400	*Alum	7	—	AC	DL	Yes
Graham Spl. 8	3560	120	Own	Yes	L	8	3⅛x4	245	5.45	31.25	85@3400	*Alum	5	AC	AC	DL	Yes
Graham Cust. 8	4100	134	Own	Yes	L	8	3¼x4½	298	5.20	33.80	100@3400	*Alum	5	AC	AC	DL	Yes
Hudson Greater 8	3115	119-126	Own	Yes	L	8	2⅞x4½	233.7	5.80	26.4	87@3600	Alum	5	—	Ste	Mar	AC
Hupmobile Cen. 6	2985	114	Own	——	L	6	3¼x4¼	211.6	5.10	25.35	70@3200	Alum	4	AC	Ste	Str	Yes
Hupmobile Cen. 8	3275	118	Own	Pines	L	8	2⅞x4⅝	240.2	5.20	26.45	90@3200	Alum	5	Pur	Ste	Str	Yes
Hupmobile C	3730	121	Own	Pines	L	8	3 x4¾	268.6	5.20	28.8	100@3200	CI	5	Pur	Ste	Str	Yes
Hupmobile H & U	**	125-137	Own	Pines	L	8	3½x4¾	365.6	5.20	39.2	133@3400	Alum	5	Pur	Ste	Str	AM
La Salle V-8	4635	134	Own	Yes	LV	8	3⅜x4 1/16	353	5.35	36.45	95@3000	CI	3	AC	Gas	Own	—
Lincoln	5300	145	Own	Ful	L	8	3½x5	384	5.23	39.2	120@2900	Alum	5	Pur	Ste	Str	Un
Marmon 70	2823	112¾	Own	Pines	L	8	2 13/16x4¼	211.2	5.50	25.4	84@3400	Alum	5	AC	AC	Str	AC
Marmon 88	4775	130-136	Own	Pines	L	8	3¼x4¾	315.2	5.50	33.8	125@3400	Alum	5	AC	AC	Str	AC
Marmon 16	5360	145	Own	Pines	O	16	3⅛x4	490.8	6.00	62.5	200@3400	Alum	5	AC	AC	Str	AC
Nash 960	2800	114¼	Own	Bish-Bab	L	6	3⅛x4⅜	201.3	5.00	23.4	65@3200	*Alum	7	AC	AC	Car	AC
Nash 970	3000	116¼	Own	Bish-Bab	L	8	2⅞x4⅜	227.2	5.00	26.4	78@3300	*Alum	9	AC	AC	Str	AC
Nash 980	3360	121	Own	Bish-Bab	O	8	3 x4¼	240	5.25	28.8	94@3400	*Alum	9	AC	AC	Str	AC
Nash 990	4000	124-133	Own	Bish-Bab	O	8	3¼x4½	298.6	5.25	33.8	115@3600	*Alum	9	AC	AC	Str	AC
Oakland V-8	3260	117	Own	Yes	H	8	3 1/16x3⅜	251.0	5.00	37.8	85@3400	S St	3	—	AC	Mar	AC
Oldsmobile	2935	113½	Own	——	L	6	3 1/16x4⅛	197.5	5.06	24.4	65@3350	CI	4	AC	AC	Str	AC
Packard 901-902	4570	129½-136½	Own	Yes	L	8	3 1/16x5	320.0	6.00	32.5	110@3200	*Alum	9	Yes	Yes	Own	AC
Packard 903-904	5045	142⅛-147⅛	Own	Yes	L	8	3½x5	384.8	6.00	39.2	135@3200	*Alum	9	Yes	Yes	Own	AC
Peerless St. 8	3642	118	Con	Bish-Bab	L	8	2⅞x4¾	246.0	5.00	26.45	90@3200	*Alum	5	Pur	AC	Sch	AC
Peerless Master 8	4521	125	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	115@3200	*Alum	5	Pur	AC	Sch	AC
Peerless De L.	4521	125	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	115@3200	*Alum	5	Pur	AC	Sch	AC
Peerless Custom 8	4766	138	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	120@3200	*Alum	5	Pur	AC	Sch	AC
Pierce-Arrow 43	4304	134-137	Own	Yes	L	8	3½x4¾	366	5.07	39.2	125@3000	*Alum	9	Han	AC	Str	Un
Pierce-Arrow 41-42	4831	142-147	Own	Yes	L	8	3½x5	385	5.07	39.2	132@3000	*Alum	9	Han	AC	Str	Han
Plymouth	2710	*170	Own	——	L	4	3⅝x4¾	196.1	4.90	21.03	56@2800	*Alum	3	—	AC	Car	Yes
Pontiac	2845	112	Own	Yes	L	6	3 1/16x3⅞	200.0	4.90	26.3	60@3000	S St	3	—	AC	Mar	AC
Reo Royale 8-35	4650	135	Own	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo Royale 8-31	4375	131	Own	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo 8-21	3610	121	Own	Yes	L	8	3 x4¾	268.6	5.37	28.8	90@3300	Alum	5	Han	—	Sch	Un
Reo 6-21	3525	121	Own	Yes	L	6	3⅜x5	268.3	5.30	27.3	85@3200	Alum	7	Han	—	Sch	Un
Reo Fly. Cloud 6-25	3950	125	Own	Pines	L	6	3⅜x5	268.0	5.30	27.34	85@3200	Alum	7	Han	V-S	Sch	Un
Reo 8-25	——	125	Own	Pines	L	8	3 x4¾	268.6	5.37	28.8	90@3300	*Alum	7	Han	V S	Sch	Un
Studebaker Six	2920	114	Own	Dole	L	6	3¼x4⅛	205.3	5.20	25.4	70@3200	CI	4	Pur	Ste	Str	No
Studebaker Dict. 8	3095	114	Own	Dole	L	8	3 1/16x3¾	221.0	5.00	30.0	81@3200	Alum	9	Pur	Ste	Str	AM
Studebaker Com. 8	3520	124	Own	Dole	L	8	3 1/16x4¼	250.4	5.20	30.0	101@3200	Alum	9	Pur	Ste	Str	Un
Studebak'r Pres 80	4250	130	Own	Dole	L	8	3½x4⅜	337	5.10	39.2	122@3200	*Alum	9	Han	Ste	Str	AM
Studebak'r Pres. 90	*4360	136	Own	Dole	L	8	3½x4⅜	337	5.10	39.2	122@3200	*Alum	9	Han	—	Str	AM
Stutz LA	4320	127½	Own	Bish-Bab	O	6	3⅜x4½	241.5	5.10	27.3	85@3150	*Alum	7	Wal	AC	Zen	Un
Stutz MA	4918	134½	Own	Bish-Bab	O	8	3⅜x4½	322	5.10	36.4	113@3300	*Alum	9	Wal	AC	Zen	AM
Stutz MB	4863	145	Own	Bish-Bab	O	8	3⅜x4½	322	5.10	36.4	113@3300	*Alum	9	Wal	AC	Zen	AM
Stutz DV 32	5240	134½	Own		O	8	3⅜x4½	322	5.10	36.4	155@3900	Alum	9	Wal	Ste	Sch	AM
Willys 6-97-98 D	*	110-113	Own	Var	L	6	3¼x3⅞	193	5.26	25.3	65@3400	CI	4	—	AC	Til	Til
Willys 8-80 D	3131	121	Own	Var	L	8	3⅛x4	245.4	5.26	31.25	80@3200	CI	5	—	AC	Til	Til
Willys-Knt. 66-D	3400	121	Own	Var	K	6	3⅜x4¾	255	5.26	27.3	87@3200	*Alum	7	Ski	Til	Til	Til
Willys-Knight 95	3122	113	Own	Pines	K	6	2 13/16x4¾	177.9	5.55	20.7	60@3400	*Alum	7	*	AC	Til	AC

KEY TO ABBREVIATIONS

Weight—§Austin standard 2 passenger coupe. **Hupmobile model H weighs 4,095 pounds, and model U 4,360 pounds. *Studebaker, 7 pass sedan. *Willys 6-97D weighs 2,670 and the 98 D weighs 2,706 pounds.

Wheel Base—*Over all length of chassis instead of wheel base, which manufacturers refuse to give. **Essex, seven-passenger sedan available on 119-inch wheel base.

Engine Make—Con. Continental; Lyc. Lycoming, Hall, De Vaux-Hall Motors Corp.

Thermostat—Bish-Bab, Bishop & Babcock, Dole, Dole Valve Co., Chicago, Ill.; Ful Fulton Co.; Pines, Pines Winterfront; Var. various makes.

Valve Arrangement—L, L head; H, horizontal; O, overhead; K, sleeve valve; LV, V-type L head.

*Air cooled. †Thermo syphon water circulation.

Compression Ratio—*Optional on the Auburn.

Piston Material—*Alum, aluminum with invar struts; Alum, aluminum alloy; CI, cast iron; S St, semi-steel.

Oil Purifier—Pur, Purolator; Wal, Wall; Han, Handy; AC, AC Spark Plug Company; Ste, Stewart-Warner; Ski, Skinner. *Using both Floato & Skinner.

Fuel Cleaner—AC, AC Spark Plug Co.; Gas Gascolator; Ste, Stewart-Warner; Til Tillotson; V-S, Van Sicklen.

Carburetor—Sch, Wheeler Schebler; Zen, Zenith; Mar, Marvel; Car, Carter; Str, Stromberg; DL Detroit Lubricator; Til. Tillotson.

Air Cleaner—AC, AC Spark Plug Company; AM, Air Maze; Han, Handy; Un United; Til, Tillotson.

Front End Drive—Link, Link Belt; Tex, Texolite; Cel, Celeron; Diam, Diamond Chain; Morse, Morse Chain Company; Var, various makes of chains; Var-G, various makes of gears.

Ignition, Generator and Starter—Aut-L, Auto-Lite; Del-R, Delco-Remy; Dyn, Owen-Dyneto Corp.; N E, North East. *Nash,—Indicates twin ignition. *Bendix starter used.

Clutch—Borg, Borg & Beck; Br-L, Brown-Lipe; Rock, Rockford Machine; Long, Long Clutch Company; Rus, Russell Mfg. Co.

Transmission Make—D, Detroit Gear; WG, Warner Gear Company; M, Muncie Gear Company; O, Own; N, New Process Gear Corp.; W, Warner Corp. *Franklin Transcontinent models are equipped with both Warner and Detroit 3 or 4 speed gear sets, according to body type.

Transmission Type—DG, Detroit Gear & Machine Co.; LGS, The LGS Corp.; F, Free Wheeling; SM, Synchro Mesh; BW, Borg-Warner; NP—New Process Gear Corp.

Universals—U, Detroit Universal Products; S, Spicer Mfg. Corp.; O, Own; M, Mechanics Universal Joint Company.

Rear Axle—Col, Columbia; Sal, Salisbury; Tim Timken; N.P., New Process Gear Corp.; ½-Semi-floating; ¾-¾ floating; F-Full floating.

Ratio—Optional on the Auburn. *On Pierce Arrow 43, 137 in W. B. rear axle ratio is 4.42. On model 41 rear axle ratio is 4.42. On model 42 ratio is 4.23.

†The axle ratio varies with body types on Franklin models.

Brakes—H, hydraulic; M, mechanical; SD, steeldraulic; Bendix, Bendix Brake Corp.

Steering Gear—Gem, Gemmer; Ross, Ross Gear and Tool Company; Sag, Saginaw; Say-B Saylor-Beall Manufacturing Company; War, Warner; N.P., New Process Gear Corp.

Rear Springs—S, semi-elliptic; El, full elliptic; Cant, semi-cantilever; S-Tr, semi-transverse. *Rear spring length on Willys, 6-98D is 51 in.

Spring Shackles—Tryon, Willys-Morrow Company; Rub B, Rubber Shock Insulator Company; Faf, Fafnir Bearing Company; ERS, Eaton Rubber Bushings; Inlox—Inland Mfg. Co.

Chassis Lubricator—Alem, Alemite; Al-Z, Alemite Zerk; Bijur, Bijur Lubricating Corp.; Par, Parval.

OF PRESENT AMERICAN PASSENGER CAR MODELS

Make and Model	Front End Drive	Ignition System	Gen. and Starter	Clutch	Transmission Make	Transmission Speeds	Transmission Type	Universals	Rear Axle	Ratio	Brakes	Steering Gear	Spring Rear	Springs Shackles	Chassis Lubric.	Tires
Auburn 8-98	Chain	Del-R	*Del-R	Long	D	3	LGS-F-SM	U	Col ½	*4.45	S D	Ross	S 56¾	Own	Bijur	17x5.50
Austin	Gear	Aut-L	*Aut-L	Rock	WG	3	——	S	Sal ½	5.25	M	Say-B	Cant	Own	Al-Z	18x3.75
Buick 8-50	Tex	Del-R	Del-R	Own	M	3	SM	O	Own ½	4.54	Bendix	Sag	S 54½	Tryon	Al-Z	18x5.25
Buick 8-60	Tex	Del-R	Del-R	Own	O	3	SM	O	Own ¾	4.45	M	Sag	S 55¼	Own	Alem	19x5.50
Buick 8-80	Tex	Del-R	Del-R	Own	O	3	SM	O	Own ¾	4.27	M	Sag	S 58⅞	Own	Al-Z	19x6.50
Buick 8-90	Tex	Del-R	Del-R	Own	O	3	SM	O	Own ¾	4.27	M	Sag	S 58⅞	Own	Al-Z	19x6.50
Cadillac V-8	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.75	Own-M	Sag	S 58	Own	Al-Z	19x6.50
Cadillac V-12	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	——	Own-M	Sag	S 58	Own	Alem	19x7.00
Cadillac V-16	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.39	Own	Sag	S 60	Own	Alem	19x7.00
Chevrolet	Var	Del-R	*Del-R	Own	O	3	——	O	Own	4.10	M	Sag	S 54	——	Alem	19x4.75
Chrysler 6	Morse	Del-R	Del-R	Borg	O	3	BW-F	U	Own ½	4.60	H	War	S 53 9/16	Tryon	Al-Z	19x5.25
Chrysler 8	Morse	Del-R	Del-R	Borg	O	4	BW-F	—	Own ½	4.10	H	War	S 54⅝	——	Al-Z	17x7.50
Chrysler 8 De L.	Morse	Del-R	Del-R	Borg	O	4	BW-F	—	Own ½	4.30	H	——	S 54⅝	——	Al-Z	17x6.50
Chrysler Imperial 8	Morse	Del-R	Del-R	Borg	O	4	BW-F	—	Own ½	3.81	H	Ross	S 57½	——	Al-Z	18x7.00
Cord (Fr. Wh. Dr.)	Link	Del-R	*Del-R	Long	D	3	——	*	Col F	4.80	H	Gem	S 62	Own	Bijur	18x7.00
De Soto Six	Var	Del-R	Del-R	Borg	O	3	BW-F	—	Own ½	4.33	H	Own	S 53⅛	——	Al-Z	19x5.00
De Soto Eight	Var	Del-R	Del-R	Borg	O	3	BW-F	—	Own ½	4.60	H	Own	S 54⅝	Rub B	Al-Z	19x5.25
De Vaux 6-75	Morse	Aut-L	*Aut-L	Borg	N	3	NP-F	S	NP ½	4.40	S D	NP	S 54¼	Tryon	Al-Z	19x5.00
Dodge Six	Morse	Del-R	Del-R	Borg	O	3	BW-F	S	Own ½	4.60	H	War	S 55¼	Tryon	Al-Z	19x5.00
Dodge Eight	Morse	Del-R	Del-R	Borg	O	3	BW-F	S	Own ½	4.60	H	War	S 54⅝	Rub B	Al-Z	18x5.50
Durant 610	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	3.96	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 612	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	4.45	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 614	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	4.45	S D	Own	S 55	Tryon	Al-Z	19x5.00
Durant 619	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	Own ½	3.90	S D	Own	S 54	Tryon	Al-Z	19x4.75
Essex Super Six	Morse	Aut-L	*Aut-L	Own	O	3	BW-F	S	Own ½	5.40	Bendix	Gem	S 54⅛	Own	Alem	19x5.00
Ford A	Var	Own	*Own	Own	O	3	——	O	Own ¾	3.78	M	Gem	S Tr39	Own	Al-Z	19x4.75
Franklin S 15 Trans.	Chain	Del-R	*Del-R	Br-L	*	—	——	M	Own ½	‡4.54	H	Gem	El 42	None	Al-Z	19x6.50
Franklin S 15 Trans.	Chain	Del-R	*Del-R	Br-L	*	—	——	M	Own ½	‡4.54	H	Gem	El 42	None	Al-Z	19x6.50
Franklin S 15 De L	Chain	Del-R	*Del-R	Br-L	WG	3	——	S	Own ½	‡4.73	H	Gem	El 42	None	Al-Z	19x6.50
Graham Bros. 6	Link	Del-R	*Del-R	Long	—	3	BW-F	—	——	4.45	H	Ross	S 54	ERS	Al-Z	19x5.00
Graham Std. 6	Link	Del-R	*Del-R	Long	—	3	BW-F	—	——	4.30	H	Ross	S 54	ERS	Al-Z	5.50x18
Graham Spl. 6	Link	Del-R	*Del-R	Long	—	4	BW-F	—	——	4.09	H	Ross	S 54	ERS	Al-Z	6.00x17
Graham Spl. 8	Link	Del-R	*Del-R	Long	—	4	BW-F	—	——	4.09	H	Ross	S 54	ERS	Al-Z	6.00x17
Graham Cust. 8	Link	Del-R	*Del-R	Long	—	4	BW-F	—	——	4.09	H	Ross	S 56	ERS	Al-Z	6.50x18
Hudson Greater 8	Morse	Aut-L	*Aut-L	Own	O	3	BW-F	S	Own ½	4.75	Bendix	Gem	S 54⅛	Own	Alem	18x5.50
Hupmobile Cen 6	Chain	Aut-L	*Aut-L	Borg	WG	3	BW-F	M	Sal ½	4.70	S D	Ross	S 53	Tryon	Al-Z	19x5.50
Hupmobile Cen 8	Morse	Aut-L	*Aut-L	Borg	WG	3	BW-F	U	Sal	4.55	S D	Ross	S 52¾	Rub B	Al-Z	19x5.50
Hupmobile C	Morse	Aut-L	*Aut-L	Long	WG	3	BW-F	U	Own ½	4.55	S D	Ross	S 54	Own	Alem	19x6.00
Hupmobile H and U	Morse	Aut-L	*Aut-L	Long	WG	3	BW-F	U	Own ½	4.07	S D	Ross	S 57	Own	Alem	19x6.50
La Salle V-8	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.75	Own-M	Sag	S 58	Own	Alem	19x6.50
Lincoln	——	Aut-L	*Aut-L	Long	O	3	BW-F	S	Tim F	4.58	Bendix	Own	S 62	Own	Alem	7.00x19
Marmon 70	Diam	Del-R	*Del-R	Rock	WG	3	BW-F	S	Sal ½	4.70	Bendix	Ross	S 54⅛	Tryon	Al-Z	29x5.50
Marmon 88	Diam	Del-R	*Del-R	Rus	D	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Al-Z	19x6.50
Marmon 16	Diam	Del-R	Del-R	Rus	M	—	BW-F	S	Sal ½	3.78	Bendix	Ross	S 60	Rub B	Al-Z	18x7.00
Nash 960	Cel	Aut-L	*Aut-L	Borg	O	3	DG-F-SM		Own ½	4.73	M	Ross	S 50⅞	——	Alem	19x5.00
Nash 970	Diam	Aut-L	*Aut-L	Borg	O	3	DG-F-SM		Own ½	4.73	M	Ross	S 50⅞	——	Alem	19x5.25
Nash 980	Diam	*Aut-L	*Aut-L	Borg	O	3	DG-F-SM		Own ½	4.46	M	Gem	S 55	——	Bijur	18x6.00
Nash 990	Diam	*Aut-L	*Aut-L	Borg	O	3	DG-F-SM		Own ½	4.50	M	Gem	S 57⅛	——	Bijur	19x6.50
Oakland V-8	Morse	Del-R	Del-R	Own	M	3	SM	M	Own ½	3.90	M	Sag	S 54½	Inlox	Al-Z	28x5.50
Oldsmobile	Chain	Del-R	Del-R	Borg	M	3	SM	U	Own ½	4.54	Bendix	Sag	S 54½	Tryon	Alem	28x5.25
Packard 901-902	Morse	N E	Dyn	Long	O	4	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	6.50x19
Packard 903-904	Morse	N E	Dyn	Long	O	4	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	7.00x19
Peerless St. 8	Morse	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.70	Bendix	Ross	S 56 9/16	Rub B	Alem	29x5.50
Peerless Master 8	Morse	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.00
Peerless De L.	Morse	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.00
Peerless Custom 8	Morse	Aut-L	*Aut-L	Rock	WG	3	BW-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.50
Pierce-Arrow 43	Gear	Del-R	Del-R	Long	O	3	BW-F	S	Own ½	4.08	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Pierce-Arrow 41-42	Chain	Del-R	Del-R	Long	O	3	BW-F	S	Own ½	*	Bendix	Ross	S 61	Faf	Al-Z	18x7.00
Plymouth	Var	Del-R	Del-R	Borg	O	3	BW-F	O	Own ½	4.33	H	War	S 53⅜	Tryon	Al-Z	19x4.75
Pontiac	Morse	Del-R	Del-R	Own	O	3	——	M	Own ½	3.90	M	Sag	S 54	Inlox	Al-Z	29x5.00
Reo Royale 8-35	Morse	Del-R	Del-R	Long	O	3	SM	U	Own ½	4.07	H	Ross	S 57½	Tryon	Far	6.50x18
Reo Royale 8-31	Morse	Del-R	Del-R	Long	O	3	SM	U	Own ½	4.07	H	Ross	S 57½	Tryon	Al-Z	6.50x18
Reo 8-21	Link	Del-R	Del-R	Long	O	3	SM	U	Own	4.42	H	Ross	S 56⅛	Tryon	Al-Z	17x6.00
Reo 6-21	Morse	Del-R	Del-R	Long	O	3	SM	U	Own	4.07	H	Ross	S 56⅛	Tryon	Al-Z	17x6.00
Reo Fly. Cloud 6-25	Morse	Del-R	*Del-R	Long	O	3	SM	U	Own ½	4.42	H	Ross	S 55¾	Tryon	Al-Z	17x6.50
Reo 8-25	Morse	Del-R	*Del-R	Long	O	3	SM	U	Own ½	4.42	H	Ross	S 55¾	Tryon	Al-Z	17x6.50
Studebaker Six	Chain	Del-R	*Del-R	Long	O	3	BW-F	S	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	19x5.25
Studebaker Dict. 8	Var G	Del-R	*Del-R	Long	O	3	BW-F	S	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	19x5.25
Studebaker Com. 8	Var G	Del-R	*Del-R	Long	O	3	BW-F	S	Own ½	4.73	Bendix	Ross	S 56	Faf	Al-Z	19x6.00
Studebaker Pres. 80	Var G	Del-R	Del-R	Long	O	3	BW-F	S	Own ½	4.31	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Studebaker Pres. 90	Var G	Del-R	Del-R	Long	O	3	BW-F	S	Own ½	4.31	Bendix	Ross	S 60	Faf	Al-Z	19x6.50
Stutz LA	——	Del-R	Del-R	Borg	D	4	——	U	Sal ½	4.75	H	Gem	S 60	Own	Bijur	19x6.00
Stutz MA	——	Del-R	Del-R	Long	D	4	——	M	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	20x6.50
Stutz MB	——	Del-R	Del-R	Long	D	4	——	M	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	20x7.00
Stutz DV 32	——	Del-R	Del-R	Long	D	4	——	M	Tim ½	4.75	H	Gem	S 62¼	Own	Bijur	18x7.00
Willys 6-97-98 D	Chain	Aut-L	*Aut-L	Borg	O	3	BW-F	S	Own ½	4.60	Bendix	Own	*S 49¾	Tryon	Alem	19x5.00
Willys 8-80 D	Chain	Aut-L	*Aut-L	Borg	O	3	BW-F	S	Own ½	4.40	Bendix	Ross	S 56	Tryon	Alem	18x5.50
Willys-Knight 66 D	Chain	Aut-L	*Aut-L	Rock	O	3	BW-F	S	Own ½	4.18	Bendix	Ross	S 56	Tryon	Alem	18x6.00
Willys-Knight 95	Chain	Aut-L	Aut-L	Borg	O	3	BW-F	S	Own ½	4.89	Bendix	Gem	S 51	Tryon	Alem	19x5.00

ENCOURAGING SIGNS OF BUSINESS GAINS IN WESTERN MASS.

Holyoke, Mass., Sept. 7. — No marked acceleration of activity among the larger industrial plants of the Springfield district is forecast for the early part of this month, but some of the smaller plants are busier and general gains are anticipated as the fall season advances.

An encouraging feature, according to A. R. Tulloch, secretary of the Western Massachusetts branch of the National Metal Trades Association, is the notably increased volume of inquiries now being received by various concerns. If only a small percentage of these result in orders being placed, considerable will be done to improve conditions.

Of outstanding interest is the improved business done in several Holyoke and Springfield foundries. Springfield Foundry Company, Fleming Foundry Company and the Hampden Brass Company are among those reported as particularly busy. More activity is observed in the pattern shops and the corrugated box industry has begun operating at full capacity.

Fisk Rubber Company sees little change in production presaged for the next two months. Between Friday of this week and the last part of the following week operations will be on a reduced basis, with departments shut down several days each, the orders of closing and reopening being determined by the position a given apartment holds in the sequence of production. This plant is employing a day force of about 1,500 full time, according to plant officials.

United American Bosch Company will continue to be on a part-time basis for several weeks, it is believed, but a marked improvement is predicted for this industry within the next two months, with new radio, magneto and ignition units coming into production.

Moore Drop Forging Company's hammers are expected to remain silent until later in the month. The Gilbert & Barker Maunfacturing Company is planning to resume full time operation soon.

Chapman Valve Manufacturing Company, which experienced a marked improvement in July, is reported to have maintained fair production volume during August, with further gains indicated for fall.

Wico Electric Company reports that its business has improved in the last month and it looks for further moderate gains in September.

Van Norman Machine Tool Company is operating on a healthy baisi, with some overtime work necessitated in getting out rush orders.

Cheney Bigelow Wire Works is reported as enjoying improved business

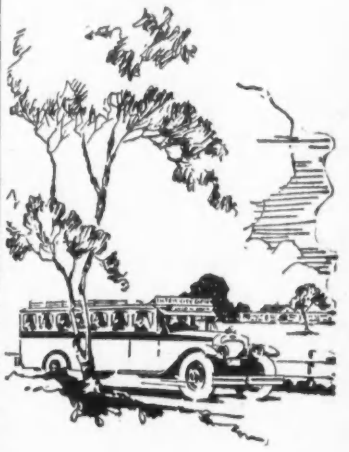
HIRSIG CO. TAKES OVER THE HIRSIG-HART CO.

Nashville, Tenn., Sept. 7.—The Hirsig Company, composed of Lawrence Hirsig, J. W. Hirsig and A. H. Hirsig, has entered the Southern territory as sales representatives, taking over the Hirsig-Hart Company and the principal lines that have been handled by this company for many years. The organization of the Hirsig Company brings together a sales group that have had a long and intimate acquaintance with the jobbing trade in the South. The Hirsig Company has acquired a group of strong lines.

WILL HANDLE ACCESSORIES

Guttenberg, N. J., Sept. 7.—De Luxe Auto Supply Company, 75 Park Ave., has been organized by Veronica Louis and John A. Louis, both of Guttenberg, and John Sauerland and Catherine F. Sauerland, both of Cliffside Park.

CONTINENTAL MOTORS · Powering a Nation · AMERICA'S STANDARD



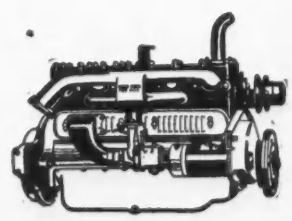
Individual Contact

The Continental Motors Corporation —although grown into the largest gasoline engine company in the world—still maintains a close working contact and understanding with its clients.

Each division of Continental is operated with a view of answering specifically the needs of each individual client.

CONTINENTAL MOTORS CORPORATION

Offices: Detroit, Michigan, U. S. A.
Factories: Detroit and Muskegon



Continental Engines

If YOU *Can Afford to Pay* *PRE*-DEPRESSION *Prices*

You may not be interested in this advertisement

COMPARE
With Any Other Magazine

HOW MUCH?

Liberty averaged 2,401,416 weekly circulation for 1930, 2,411,000 for the first half of 1931.

WHO?

Liberty is deliberately edited for *both* men and women. It is read by 2,750,000 men and 3,009,000 women. Result records have been broken for men's and women's products alike.

80% of all Liberty families above $2,000 income class 65.8% U. S. average

52% own homes 37% U. S. average*

84% have telephones 39% U. S. average

58% have radios 46% U. S. average

50% have vacuum cleaners 37% U. S. average

34% have electric washers 29% U. S. average

15% have mechanical refrigerators 8% U. S. average

**In cities covered by Starch Survey*

WHERE?

Liberty concentrates three-quarters of its circulation in cities over 25,000 population. Liberty places more circulation here (where major part of all retail business is done) than any other magazine.

HOW READ?

Liberty is wanted enough by its readers, that 99% of them buy voluntarily week after week. No expensive subscription crews are necessary to sign up readers 6 months or a year or two in advance. 99% single copy circulation is 99% guaranteed-to-be-read circulation.

Then, instead of burying 90% of its advertisements after the start of the *last* story, Liberty alternates advertisements and story leads throughout the book. Surveys show this nearly doubles readers-per-advertisement.

THE YARDSTICK OF CIRCULATION QUALITY

IF *your* business has been exempt from the 30 per cent drop in commodity prices you may not care that magazine costs have also, on the average, been exempt.

But, within 60 days of the announcement of Liberty's new management, $1,521,677 in new orders have poured in from 92 advertisers and 58 agencies who felt that Liberty's drop of 35 per cent in cost since 1926 was made to order for their Post-Depression problems.

A New Opportunity

On April 1st, 1931, the Macfadden Publications, Incorporated, announced the purchase of Liberty.

They confirmed the continuance of the editorial policy of dramatic, newsy, concise stories and articles by famous authors and illustrators, which had been responsible for the most sensational circulation success on record.

But they added that $100,000 more a year would go into these editorial, manuscript and art activities.

Quality of physical presentation was also to be stepped up.

Within six weeks, two improvements had been made in paper stock.

Recently, newspapers carried the story of the biggest quality paper order ever placed by a single magazine, whereby Liberty, beginning January, 1932, will pay $160,000 more a year in the interests of better reproduction.

What This Makes Possible

Now advertisers, pressed to do 1928 type advertising jobs with 1932 model appropriations, are considering what 1932-styled, 1932-priced Liberty can give them.

They find that their magazine dollar buys:

Liberty	565 families
Average of 3 other Weeklies	377 families
Average of 2 Monthlies	391 families
Average of 6 Women's Magazines	286 families

In other words, their advertising money can reach through Liberty:

50 per cent more families than in other Weeklies
45 per cent more families than in Monthlies
98 per cent more families than in Women's Magazines

This Is No Slight Advantage

But, then, neither is a million and a half dollars within 60 off-season days, slight recognition.

If 50 to 100 per cent more coverage is needed to make your 1932 appropriation do a 1928 job, you, too, will be among those fighting fire with fire—next year in Liberty.

Write without obligation for booklet: "To every man with $1 to spend in advertising." Liberty Magazine, 2723 Graybar Building, New York City.

AMONG ADVERTISERS NOW APPEARING IN LIBERTY

American Safety Razor Corp.
American Tel. & Tel. Co.
American Tobacco Co.
Axton-Fisher Tobacco Co.
B. V. D. Co.
Barbasol Co.
Bauer & Black
Beech-Nut Packing Co.
Borden Co.
Bristol Myers Co.
Brown & Williamson Tobacco Co.
Chesebrough Mfg. Co.
Chi., Mil., St. Paul & Pac. R.R.
Chrysler Motors Corp.
Cluett-Peabody & Co.
Coca-Cola Co.
Columbia Pictures Corp.
Crosley Radio Corp.
R. B. Davis Co.
Jos. Dixon Crucible Co.
Encyclopaedia Britannica, Inc.
Ethyl Gasoline Corp.
Florida Citrus Exchange
General Motors Corp.
Gillette Safety Razor Co.
Alexander Hamilton Institute
Hewes & Potter
Hinze Ambrosia, Inc.
Chas. E. Hires Co.
Houbigant, Inc.
Indian Refining Co.
International Mercantile Marine
Jantzen Knitting Mills
Johnson & Johnson
Kellogg Co.
Kolynos Co.
Kress & Owen Co.
Lambert Pharmacal Co.
Larus & Bros. Co.
Lever Bros. Co.
Mennen Co.
Philip Morris & Co.
Northwestern Yeast Co.
Norwich Pharmacal Co.
Parker Pen Co.
Pepsodent Co.
Pompeian Co., Inc.
R. C. A.-Victor Corp.
R. J. Reynolds Tobacco Co.
Sinclair Refining Co.
A. G. Spalding & Bros.
Stanco, Inc.
A. Stein & Co.
Texas Co.
Vapo Cresolene Co.
Veldown Company, Inc.
Wander Co.
G. Washington Coffee Co.
L. E. Waterman Co.
R. L. Watkins Co.
Western Clock Co.
W. F. Young Co.
Zonite Products Corp.

Liberty... *a weekly for the whole family*
PRICED FOR *POST*-DEPRESSION

Aircraft Propellers

(Continued from Page 5)

were inserted in steel ferrules, which were in turn held in the hub barrel by frictionless baring so that the blades were free to rotate; to effect the rotation of the blades, pins engaging the bases of latter extended through the barrel and were connected to the rotating yoke of the intermediate control unit, which could be moved back and forth axially; a running ball race connected the rotating yoke to a stationary yoke attached to an actuating lever. The connection from here to the cockpit could be accomplished with either rods or cables.

A second type has as its essential features: aluminum alloy blades with hollow shanks and internal bearings; steel sub extensions from the central portion of the hub to the interior of the hollow blade shanks to retain the blades through frictionless bearings; centrifugal counterweights to reduce the load on the intermediate control unit bearing; screw actuated intermediate control unit to give operator favorable mechanical advantage; intermediate control unit lock to relieve cables and cockpit controls of all loads except at the time the pitch is being changed; cable connections between intermediate control unit and cockpit controls; and pitch indicator in cockpit. The numerous minor improvements are omitted. On Liberty engined observation type airplanes this propeller has given satisfactory service, but the actual flying time is only a little over 200 hours on a single propeller, so the matter of life or endurance is still uncertain.

A third type has a system of gearing built into the propeller by which the pitch could be either increased or decreased by holding one or the other of two brake drums. The brake bands were to be actuated from the cockpit. Engine power was employed to effect the actual changing of the pitch. The blades of this propeller could be turned 360 degrees in their sockets, and hence were capable of being "feathered" into the air stream to eliminate "wind-milling" as well as being reversed, when reverse thrust was needed. This was the first "feathering" propeller to come into the experience of the division. In a subsequent redesigned propeller of this type which was tested, a very ingenious, though quite complicated, pitch indicating mechanism was included.

The engineering division, air corps, collaborated with the Standard Steel Propeller Company in the design of a 400 horse power hollow steel reversible propeller, which this company manufactured and delivered in 1920. The general scheme of changing the pitch was closely allied to that employed by the air corps in its other efforts, but advantage was taken of the hollow blades to encase therein all of the bearings and utilize hub stubs instead of hub barrels for the support of the blades, and to eleminate ferrules that had to be employed with wood and micarta blades. Duplicate propellers were made with hollow aluminum blades in an effort to reduce the weight incurred in the steel propeller. These propellers were made before the use of centrifugal counterweights were employed, and although the blades turned very freely when turning slowly, it was extremely difficult to increase the pitch when running at the higher speeds. In fact, a great deal of force was necessary just to hold the blades at normal pitch setting and to keep them from turning to a low pitch angle. This imposed a heavy continuous load on the intermediate running bearing. With its deficient lubrication this was not satisfactory.

Another controllable propeller in which the method of changing the pitch was closely related to that used by the army was submitted for test by the navy. The outstanding feature of this propeller was that the pitch of the blades could be increased sufficiently so that the propeller could be "feathered" or could be reversed for reverse thrust. The propeller was designed primarily for use on airships.

A still different type of controllable propeller manufactured in Germany, known as the Reisner controllable, and submitted through the National Advisory Committee for Aeronautics, was tested by the engineering division in 1924. This propeller was to be operated by power from the engine communicated through a pair of rubber tired wheels attached to the propeller and which apparently were intended to roll on circular tracks that could be engaged and disengaged with the wheels by means of controls extending into the cockpit. (No tracks or control mechanism were received with the propeller.) Attached to each wheel was a screw carrying a threaded block engaging with the blade in such a manner that as the block was forced along the screw the blade was turned to different angles. A small gear keyed to the opposite (front) end of each screw meshed with a rather large gear which was mounted concentrically with the engine shaft and which served to keep the blades synchronized as to pitch. Fig. 6 illustrates this design.

The Material Division, Air Corps, in 1928, tested a propeller, in which the pitch of the blades was changed by means of power derived from an electric motor mounted on the hub of the propeller and concentric with its axis of rotation. Electric power was transmitted from a battery to the motor through slip-rings and brushes. Control was effected by making proper electric contacts in the cockpit.

An interesting later type of controllable propeller is embodied in the design of the Smith Engineering Company, Cleveland, O. This propeller employs hollow steel blades which are retained in the hub by multiple race ball bearings. The blades may be rotated through 360 degrees about their axis by a system of worms and gears carried in the hub, and operated by a servo-machanism controlled by the pilot. It is nine feet in diameter, weighs 113 pounds complete, and is designed especially for mounting on the 450 h. p. Pratt & Whitney Wasp engine. The engaging device for the servo-mechanism is carried in a small assembly which replaces the thrust bearing cover plate of the engine.

The Southern Aircraft controllable propeller is what may be termed a "three-position" controllable. It provides selection of any one of three pitch angle settings, which may be designated low, intermediate and high. The blades used in this propeller are conventional and of forged duralumin. They are actuated by coil springs and counterweights, both the spring and counterweights being so proportioned that at propeller speeds above a given r. p. m. centrifugal force developed by the counterweights exceeds the tension in the springs, opposing blade forces and friction. In order to increase the pitch angles from low to intermediate to high it is necessary that the propeller be rotating at some speed greater than the given r. p. m., and in order to decrease the angles it is necessary that the propeller rotate at some speed below a given r. p. m. The r. p. m. above which the blade angles may be increased is considerably higher than the r. p. m. below which the angles may be decreased. This quality, which may be termed lag, is due to the fact that in increasing the pitch angles the counterweights must develop a force sufficiently in excess of the tension in the springs to overcome friction and the centrifugal torque developed in the blades. The counterweight arms are normally locked in one of three positions, control being effected by the engagement of a stationary roller with a lock cam on the hub. The engagement of the roller with the lock cam unlocks the counterweight arm and permits it to move to the next higher or lower position, where it is again locked in position. Full control of the propeller is effected by manipulating the cockpit control lever and varying the engine r. p. m. Figure 9 shows the hub and part of the controlling mechanism of this design.

GETS BUS PERMITS

Moorestown, N. J., Sept. 7.—Moorestown Township committee has granted permission to the Rader Bus Company, Camden, to operate five passenger buses between Moorestown, Camden and Philadelphia. The line would be operated on an intrastate as well as interstate basis, it was said. The resolution states that no less than three buses always shall be in operation and all ordinances must be obeyed.

PLANS FREIGHT LINE

Sharpsville, Pa., Sept. 7.—Harley S. Kreis has plans in progress for establishing a motor freight line between this city and Pittsburgh, Pa. It is planned to begin operation of the new line early this fall, using trucks and trailers.

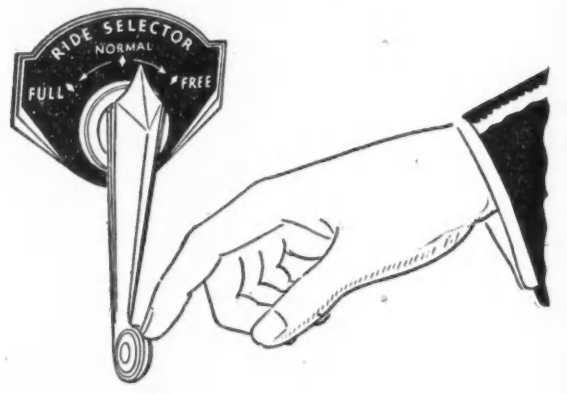
NEW GRAHAM DEALER

Waterbury, Conn., Sept. 7.—John T. Andrews, 65 Watertown Ave., has been given the Graham dealership for Waterbury and vicinity.

D. E. BROWN APPOINTED

New Haven, Conn., Sept. 7.—David E. Brown has been appointed sales manager of the New Haven Buick Company, 320-324 Whalley Ave.

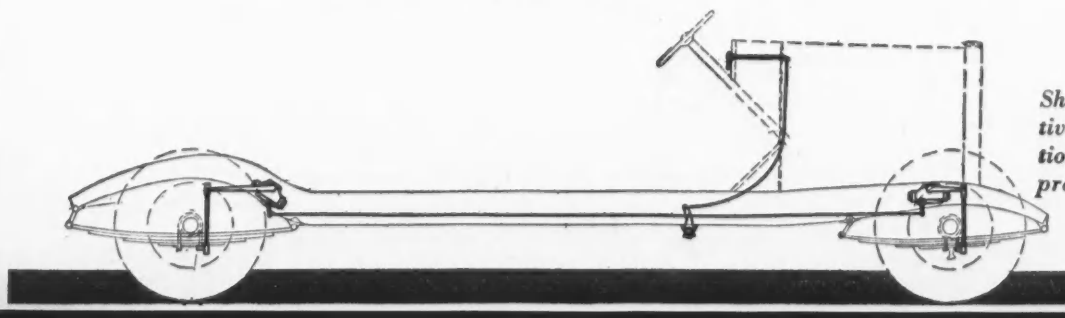
A
new era
in riding comfort
•
MONROE
RIDE SELECTOR



Smooth boulevard, country lane, bumpy road—the new Monroe Ride Selector easily, quickly adjusts all four hydraulic shock eliminators to meet *any* driving conditions. Simple to operate—just touch the Selector lever on the dash.

A dramatic, revolutionary improvement, the Monroe Ride Selector carries an instant appeal to car manufacturers who pride themselves that their product is as up-to-date as modern design and engineering can make it. Let us install the Monroe Ride Selector on your test cars. The most gruelling tests will convince you that here you have a powerful new sales feature with which to capture the motoring public. The Monroe Auto Equipment Company, Monroe, Michigan.

MONROE
RIDE SELECTOR



Showing how simply, yet effectively, the Ride Selector functions—instantly exercising the proper control on all four shock eliminators.

FORD JULY SALES 25.9% OF TOTAL

New York, Sept. 7.—Registrations of new Ford passenger cars in July amounted to 50,349, equivalent to 25.9 per cent. of the total new car registrations of the entire industry for the month. For the first seven months, Ford registrations were 401,150, or 29.2 per cent. of the industry's total.

In July, 1930, Ford retail sales, as measured by the registrations, in the United States amounted to 109,372, or 43 per cent. of the industry's total, and the total for the first seven months of last year was 793,898, or 41.7 per cent. of the aggregate. The July decline in units from last year amounted to 54 per cent., while the falling off for the first seven months was 49.5 per cent.

Ford in July obtained a smaller share of the total business than in any previous months this year. In January Ford sales accounted for 29.2 per cent. of the total, in February, 29.5 per cent.; in March, 30.3 per cent.; in April, 30.7 per cent.; in May, 30 per cent., and in June, 28.8 per cent.

NEW PASSENGER CAR REGISTRATIONS FOR FIRST

Name of Car	Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Mass'setts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska
Auburn	26	24	5	2548	158	454	25	181	54	31	2374	782	228	71	123	61	86	254	1215	916	332	2	559	39	77
Austin	10	9	1	481	27	14	6	113	18	11	135	41	31	58	28	6	3	8	53	80	31	5	68	10	32
Buick	318	216	171	5222	801	1493	252	620	635	124	3860	1401	881	641	337	241	564	775	3710	2939	1117	148	1583	255	582
Cadillac	16	13	23	827	43	266	32	52	59	2	676	112	57	43	25	23	58	69	423	472	89	2	144	10	21
Chevrolet	4305	1191	2927	25028	4643	5786	1136	6306	6477	1487	24410	12211	12677	8137	7045	4495	3012	7672	15456	19971	13312	3188	16421	2178	7554
Chrysler	151	60	164	2337	290	704	149	473	288	95	2346	931	658	270	583	246	258	447	1673	1581	977	134	778	211	359
Cord	1			64	15	8		19	6	3	168	55	12	10	10	9	2	13	30	40	13	1	41	4	8
De Soto	63	77	50	1879	73	611	20	85	97	76	1446	1068	217	140	231	166	95	179	361	938	273	31	408	118	81
*De Vaux		16		697	27	40	1	9	5	23	143	30	86	7	24	12	13	4	101	323	25		25	20	9
Dodge	133	112	313	2846	441	877	27	275	377	159	3258	1245	1004	554	708	354	338	362	1864	2216	770	106	1240	166	420
Durant	2	4	14	771	173	58	45	29	8	41	256	106	211	72	76	7	37	89	204	288	131	1	193	64	56
Essex	48	41	31	1196	295	746	84	398	163	42	1856	1095	766	507	450	119	721	470	3054	2621	689	24	765	131	204
Ford	3918	1340	2467	31753	3808	5328	1142	6259	6444	1327	24757	10763	9204	5485	5907	4201	3186	5775	20866	24136	9152	2725	11899	1888	6390
Franklin	1		1	186	9	84	7	50	22	5	149	30	9	14	7	14	27	44	215	8	13	1	39	13	8
Graham	26	5	73	1102	159	296	6	273	107	49	806	300	195	130	84	62	107	196	438	656	352	25	437	26	117
Hudson	18	36	12	996	204	367	40	239	113	33	836	469	384	312	142	75	258	201	1081	1093	373	20	266	90	104
Hupmobile	45	37	14	852	73	285	11	105	167	7	999	320	178	64	158	90	77	214	723	427	435	53	357	46	90
La Salle	16	7	21	368	28	152	27	24	34		506	72	38	25	20	19	48	52	447	203	62	4	95	13	10
Lincoln	4	5	3	246	11	39	7	26	19	3	278	37	27	12	21	16	10	25	141	141	36	4	64	3	17
Marmon	34	5		146	54	79	2	74	29	1	313	279	44	58	89	36	29	25	142	180	43	4	256	32	28
Nash	72	120	88	1991	297	624	55	197	163	84	1998	472	430	273	127	284	348	378	1988	599	516	144	738	127	188
Oakland	12	26	6	682	100	318	30	70	48	24	759	219	153	117	75	21	143	183	443	526	183	5	340	38	49
Oldsmobile	38	83	50	1424	209	595	95	184	257	55	3348	1369	892	339	154	157	352	316	1849	2956	1044	34	1057	108	358
Packard	30	25	8	794	45	325	52	86	45	10	998	141	90	46	60	37	80	150	637	403	231	8	210	7	50
Peerless				53	5	3	1				175	7	2	9	2	3	2	66	56	20	5		17	1	3
Pierce-Arrow	2	3	2	300	30	100	5	27	38		239	36	6	13	17	22	10	46	289	38	47	2	125	6	5
Plymouth	149	77	240	1421	352	393	61	345	208	130	1812	1193	966	432	716	178	393	452	1296	2712	1575	62	1156	210	671
Pontiac	125	59	154	2336	447	1261	207	652	395	84	4116	1712	1682	1037	458	267	753	1026	2957	3365	1675	126	1799	275	651
Reo	13	5	13	359	40	100	2	69	24	21	296	100	72	62	56	10	48	64	284	314	115	3	111	34	27
Studebaker	126	104	53	3480	307	575	37	212	334	105	2434	1024	528	395	261	186	317	438	1489	854	751	107	744	140	447
Stutz				13	5	3		1	1	1	58	14	2	7	2	2	2	2	2		1		8		
Whippet	34	3	52	121	107	9	4	16	32	15	172	307	164	95	155	3	17	19	17	359	88	14	462	26	121
Willys	175	42	46	1279	381	294	48	172	99	89	1593	960	1136	485	460	87	253	309	817	943	1148	53	1223	154	534
Willys-Knight	12	6	6	514	40	79	12	28	15	11	336	81	72	59	66	21	37	58	285	145	125	10	150	16	79
Miscellaneous			2	144	11	10		1	3		253	67	7	1	5	9	1	9	11	6	184		132	2	22
Totals	9923	3751	7010	94456	13708	22376	3628	17670	16784	4148	88159	39049	33109	19980	18682	11539	11685	20390	64617	72469	35913	7056	43910	6461	19372

*Four months' report.

NEW PASSENGER CAR REGISTRATIONS FOR FIRST

Name of Car	Alabama	Arizona	Arkansas	California	Colorado	Conn.	Delaware	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Mass.	Michigan	Minn.	Miss.	Missouri	Montana	Nebraska
Auburn	5	8	13	636	53	211	32	52	31	9	665	268	140	30	69	42	22	63	402	132	83	2	184	27	39
*Austin	3		5	106	1	21	2	16	12	8	34	23	16	12	9	14	10	12	40	84	33	4	36		4
Blackhawk		2		11	1	9		1	2	1	44	2	2	4	3	2		2	9		1		12		
†Buick	480	330	334	4846	827	1663	266	773	507	216	5257	1476	1047	993	406	436	568	977	3471	3188	1057	429	1745	224	761
Cadillac	25	7	30	720	29	226	40	67	36	4	491	100	54	33	31	28	59	62	403	415	57	11	114	12	12
Chevrolet	5582	1630	4688	23278	5227	5379	1203	5768	5236	2176	27272	12478	17517	9352	7407	5190	2689	7512	12955	20777	13510	5428	18978	2293	9031
Chrysler	205	85	338	3023	360	904	145	458	196	119	2971	967	803	418	553	332	368	567	1852	1328	1069	326	924	187	487
Cord	1	3	3	210	8	13	4	26	10	2	207	72	19	7	12	2	3	7	59	46	13		31	8	13
De Soto	80	139	162	2766	218	753	35	175	132	121	2191	1058	271	332	310	276	199	175	744	1106	350	153	588	149	167
Dodge	221	193	474	3539	557	1111	36	335	366	245	3341	1486	1334	855	746	575	386	434	2531	1845	792	286	1430	246	740
Durant	14	84	79	2300	405	147	98	57	92	148	747	314	585	177	193	26	140	173	435	644	435	37	598	123	210
Essex	220	79	158	2457	452	1216	118	480	160	126	2964	1797	990	709	727	224	836	716	3868	3309	958	93	1599	212	372
Ford	8460	2532	7419	52653	7935	9496	2276	10290	9054	3094	50228	22718	22419	13445	11670	8185	4470	10263	31499	56193	22883	7896	26220	3149	12570
Franklin	3	11	9	457	27	174	14	57	48	9	454	56	25	16	37	21	34	59	348	123	17	2	101	35	10
Gardner				85	12	3					159	11	1	2	2	15	3		36	2	16		83		6
Graham	116	87	113	1891	305	579	12	348	167	97	1462	551	436	219	162	150	109	361	876	1121	631	70	818	71	209
Hudson	119	53	52	1534	241	550	58	295	135	64	1487	781	490	444	216	137	262	286	1406	1656	448	52	496	112	124
Hupmobile	93	90	53	1243	162	495	45	135	135	26	1680	381	350	184	220	144	112	270	991	749	428	75	552	85	182
Jordan			1	14	3	42	2	12			49	23	1		6			13	35	51			11		
La Salle	52	16	55	681	65	307	45	89	57	3	773	105	65	33	38	30	64	87	559	409	134	17	191	19	20
Lincoln	14	6	17	302	10	49	6	35	20	1	363	64	40	24	22	16	14	26	135	133	40	13	77	3	27
Marmon	33	46	20	457	143	156	6	118	53	11	665	544	168	72	124	69	50	64	390	350	127	22	256	85	75
Nash	93	144	157	2258	417	731	65	198	115	108	2535	712	614	470	217	430	380	403	1992	743	604	286	896	212	257
Oakland	21	53	43	1124	143	415	50	138	61	54	1120	426	277	239	119	99	142	231	627	895	441	26	458	84	121
Oldsmobile	65	140	64	1839	253	570	71	166	233	83	3065	1459	1076	414	220	174	318	416	1468	2770	851	66	1476	84	547
Packard	60	49	22	1596	107	580	87	169	86	16	1603	288	179	87	109	91	138	246	1351	863	384	21	391	11	89
Peerless	1	15		169	10	56	1	3			346	53	23	46	19	19	27	29	239	56	16		79	3	12
Pierce-Arrow	7	6	13	395	42	159	12	34	23		273	51	27	24	26	17	23	63	395	86	66	3	153	2	6
Plymouth	210	106	418	1436	412	520	95	305	216	149	2850	1379	1437	701	816	263	517	435	1437	2307	1827	104	1343	268	845
Pontiac	136	119	202	2502	464	988	197	379	172	156	3726	1895	1529	1039	487	438	531	826	2310	2659	1734	180	1797	243	682
Reo	16	6	15	614	38	288	2	86	19	12	472	121	86	78	107	26	52	80	523	491	122	26	135	41	32
Studebaker	221	280	110	4060	296	857	57	127	284	116	2854	1257	724	397	320	216	377	516	1809	1336	896	121	721	187	497
Stutz		1		34	9	11				1	66	18	7	13	4	2	3	2	26	4	3		15		3
Viking	3	11	2	111	8	21	4	12	19	8	175	69	25	12	6	6	5	10	63	126	36		47	8	26
Whippet	87	48	60	348	220	115	26	98	53	81	777	541	673	338	343	60	86	201	314	462	631	77	1150	124	453
Willys	52	106	39	805	335	282	53	140	98	67	1472	721	1003	538	405	106	236	276	760	846	990	40	1050	146	438
Willys-Knight	11	48	29	914	140	176	12	51	23	10	658	138	150	146	95	60	89	106	611	201	206	20	280	54	141
Windsor				58		1			1		123	2		3	4	4		44	7	2	8		104		
Miscellaneous	5		2	179	4	25	3	3	9		156	26	14	4	5	1	5	7	31	38	16		105	5	17
State Totals	16717	6533	15199	121651	19939	29299	5178	21496	17861	7341	125775	54431	54617	31910	26265	17928	13327	26020	77007	107546	51913	15680	65244	8542	29238

*Two months' report. †Including Marquette

NATIONAL ACME TO MAKE DARDELET BOLTS

Cleveland, O., Sept. 7.—The National Acme Company of Cleveland, O., and Windsor, Vt., has entered into a license agreement with the Dardelet Threadlock Corporation to manufacture, use and sell bolts, nuts and screw machine products threaded with the Dardelet self-locking screw thread.

BUY FOR EXPANSION

New Brunswick, N. J., Sept. 7.—Anthony and Frank Spilatore, proprietors of the Spilatore's Brothers Garage, on Route 25, near Deans, have purchased four lots fronting on Route 25 directly opposite Finnegan's Lane. The purchasers will immediately erect a garage on the property. They have a large garage on the north side of the highway, and find that, to take care of their growing business, they need an establishment on both sides of the street.

NEW ACCESSORY DEALER

Newark, N. J., Sept. 7.—A charter has been granted to Superior Stores Corporation to deal in automobile accessories. Sadie C. Tuffly and Gerald Kolba, Newark, and Louis Sokol, Belleville, are the directors.

SEVEN MONTHS OF 1931 BY MAKES AND STATES

Name of Car	Nevada	N. Hampshire	New Jersey	New Mexico	New York	No. Carolina	No. Dakota	Ohio	Oklahoma	Oregon	Penn'vania	Rhode Island	So. Carolina	So. Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	Dist. of Col.	Totals
Auburn	24	64	1471	2	4497	118	24	1803	75	101	2082	235	34	22	106	102	44	68	124	165	181	616	12	243	22,838
Austin	3	4	71	11	163	64	1	62	39	20	173	12	35	15	36	188	5	1	49	44	29	47	2	15	2,368
Buick	78	338	3936	214	11367	500	175	2488	735	443	5333	578	249	215	429	2145	178	265	701	755	325	1482	147	624	62,586
Cadillac	8	30	559	11	1884	35	3	377	81	30	633	63	9	2	35	149	20	15	45	46	34	127	7	68	7,828
Chevrolet	470	2046	16751	1048	43678	6537	2459	23095	7401	3579	29761	2575	4193	2688	6645	20151	1561	1127	9347	4148	4047	11309	1058	4790	427,489
Chrysler	98	165	2153	70	6675	523	119	2267	322	291	4069	428	215	202	215	1165	74	153	501	470	430	862	95	320	38,045
Cord	3		49		203	5	1	73	7	9	61	5	2	1	1	23	2	1	8	12	9	32	1	9	1,049
DeSoto	28	75	612	19	2594	133	21	1725	81	197	1838	320	140	83	136	679	52	47	334	408	151	479	11	238	19,184
*De Vaux	5	14	165		210	28	8	74	2	53	205	1	9	22	12	7	33	2	3	51	23	162	4		2,733
Dodge	61	153	1559	102	4298	546	161	1985	771	280	3488	346	204	309	454	1424	159	163	629	418	518	1279	155	476	40,103
Durant	11	31	286	21	438	9	34	371	24	174	408	24	1	56	21	75	35	10	37	185	22	128	2	42	5,381
Essex	35	286	1584	7	4731	396	56	2350	111	126	3087	309	141	101	232	380	125	265	571	275	299	1056	121	268	33,438
Ford	515	2246	14991	858	41963	7241	1772	22758	5313	3383	24288	2387	3730	2020	5557	16959	1360	1228	9099	4644	3822	8428	826	5642	401,150
Franklin	2	23	181	2	529	10		159	26	37	342	36	3		16	47	12	4	5	30	10	27	2	25	2,484
Graham	17	59	530	9	1787	91	49	746	78	216	1387	111	20	37	104	375	101	27	128	179	173	340	8	182	12,781
Hudson	23	112	804	12	1992	183	33	838	95	94	1185	103	77	45	69	241	86	113	223	132	117	445	38	86	14,908
Hupmobile	13	69	714	1	2102	39	20	809	49	39	1291	110	74	76	116	308	49	67	226	249	89	219	34	197	12,787
La Salle	7	21	332	4	988	25	2	209	29	17	486	70	14	1	28	102	8	23	24	20	26	83	2	46	4,858
Lincoln	3	15	121	3	612	8	7	123	18	17	185	23	3	1	21	39	5	1	16	15	10	30	1	32	2,504
Marmon	5	16	207	5	535	13	18	436	15	26	503	7	2	6	11	99	11	3	63	20	40	97	3	44	4,167
Nash	18	234	2001	34	5303	91	90	1447	135	223	2416	242	44	81	145	499	124	144	204	178	185	1277	64	264	27,744
Oakland	3	75	637	13	1534	20	21	685	87	52	909	80	21	41	37	111	25	53	148	113	115	374	13	136	9,873
Oldsmobile	20	274	2171	42	5569	257	97	2624	160	205	3218	131	105	357	243	432	72	139	276	485	246	1145	76	462	36,129
Packard	11	54	775	5	2112	43		519	94	53	983	71	21	14	55	180	19	30	119	80	67	170	4	190	10,237
Peerless		1	68		101			194			108	20				5		1	4	4		17		83	1,036
Pierce-Arrow	1	10	323	4	693	10		167	35	23	279	58	4	1	16	106	3	9	30	24	7	65	1	37	3,314
Plymouth	47	214	830	64	3828	439	206	2791	319	258	3063	229	174	292	317	1058	51	207	454	546	506	899	115	256	34,363
Pontiac	26	372	2452	50	6474	587	303	4114	686	329	4130	582	257	201	291	1225	127	200	1054	540	673	1833	66	596	54,787
Reo	3	22	254	6	765	13	14	258	28	48	285	115	13	7	26	165	20	14	33	80	52	96	10	16	4,585
Studebaker	62	161	1824	41	5097	131	113	1717	204	298	2398	240	79	165	326	1027	102	66	313	578	190	932	67	362	31,941
Stutz		1	12	1	57			23	1		5	2			4	5	2	1	3	3	1	1	1	1	248
Whippet	2	10	35	11	440	26	69	486	61	10	198	6	2	60	22	65	5	8	27	62	27	84	5	4	4,137
Willys	11	196	900	41	3614	167	244	2548	157	96	2571	158	39	191	241	567	60	181	264	348	518	932	40	125	26,989
Willys-Knight	4	23	469	12	1264	14	20	584	48	35	559	40	3	15	23	95	11	15	31	111	48	110	9	49	5,855
Miscellaneous		1	35	1	175			142	45	1	145	2			5	16			1	3	1	32		17	1,502
Totals	1617	7415	59862	2724	168272	18302	6140	81047	17332	10763	102072	9719	9917	7327	15995	50214	4541	4651	25094	15421	12991	35215	3000	15945	1,371,421

SEVEN MONTHS OF 1930 BY MAKES AND STATES

Name of Car	Nevada	N. Hamp.	N. Jersey	N. Mexico	New York	N. Ca'lina	N. Dakota	Ohio	Oklahoma	Oregon	Penn.	Rh. Isle.	S. Ca'lina	S. Dakota	Tenn.	Texas	Utah	Vermont	Virginia	Wash'ton	W. Va.	Wisconsin	Wyoming	D. of Col.	Six Months Totals
Auburn	26	48	681	12	2314	9	5	543	50	37	742	83		16	41	91	58	32	45	140	43	144	4	66	8,448
*Austin	5		66		138	12	2	94	13	34	152	1	4	3	31	33	10	5	14	9	9	24		18	1,182
Blackhawk		1	13		42			7		1	9				1	1	4		4		1	4			196
†Buick	159	337	4040	318	11562	631	160	2965	1570	596	6026	617	310	217	799	3296	225	307	870	1276	411	2082	159	585	71795
Cadillac	5	30	501	4	1506	30	1	355	67	25	495	44	5	1	52	134	19	15	38	48	21	115	5	49	6,631
Chevrolet	422	1770	13151	1440	34754	5742	3061	24769	12653	3887	27903	2289	3962	4087	8002	25841	1887	1263	9269	5335	5539	14139	908	2781	447,410
Chrysler	95	212	2260	97	5955	558	172	2289	541	304	4902	410	216	250	432	1311	142	222	582	757	434	1091	111	228	42,556
Cord	3	2	48	1	266	2	2	75	19	5	84	12		4	10	18	9	9	11	16	9	29	2	6	1,421
De Soto	67	150	1004	76	2990	205	91	1973	335	247	2518	391	157	81	238	1405	140	65	335	590	262	620	32	125	26,747
Dodge	131	156	1852	130	4392	624	177	2571	1331	418	4179	402	192	402	720	2094	244	180	774	627	744	1404	147	197	48,192
Durant	49	78	593	35	1247	60	124	900	194	513	1393	56	23	226	97	579	205	39	176	756	140	541	20	97	16,402
Essex	86	280	2212	48	6139	440	143	3421	322	382	4214	337	188	232	450	731	241	303	663	687	617	1479	92	349	48,902
Ford	753	2994	26176	2091	69940	11013	4284	48296	16863	7097	53312	3940	6182	5643	12810	37178	3394	2234	14332	11483	8129	21198	1427	6112	793,698
Franklin	4	25	312	2	1069	33	5	426	49	63	545	41	13	5	37	134	19	15	42	79	40	104	7	33	5,249
Gardner	4		20		92		2	70		18	71	5			3	18		1		2	1	24			767
Graham	24	94	946	27	2820	181	82	1391	244	289	2207	130	51	78	266	601	148	127	223	314	347	723	23	199	22,496
Hudson	69	102	1221	26	3037	243	55	1467	185	197	2125	146	110	106	173	359	103	118	215	316	211	723	33	133	22,971
Hupmobile	19	76	1042	2	2663	46	14	1243	176	157	1970	111	74	124	257	409	56	81	278	388	132	360	41	158	18,757
Jordan	1	4	67		223			70	2	3	81	2				19			3	13	4	16		8	779
La Salle	15	20	536	18	1325	41	6	359	92	41	690	75	18	7	82	182	11	38	63	50	43	110	4	56	7,796
Lincoln	4	6	114	3	639	22	2	167	38	22	187	20	5	2	27	77	6	5	25	21	10	39	1	26	2,925
Marmon	11	34	388	10	1291	54	73	658	71	84	769	18	42	29	60	281	27	23	104	75	130	163	9	45	8,553
Nash	48	243	2232	52	5877	160	185	1675	344	218	3019	216	91	172	233	675	131	166	284	360	324	1611	65	176	33,594
Oakland	9	69	825	23	2044	93	75	1154	238	146	1534	97	55	81	101	436	52	77	223	193	228	632	13	143	15,951
Oldsmobile	56	169	2060	60	5301	195	153	3046	393	280	3530	189	103	494	277	705	118	136	253	611	331	1293	66	351	38,088
Packard	22	61	1390	11	3700	83	12	1054	214	93	1971	154	51	42	153	326	55	74	169	142	127	301	9	220	19,057
Peerless		11	248		420	4		434	8	1	340	53		1	4	44		13	37	24	7	68		104	3,043
Pierce-Arrow		17	418	1	968	5		203	79	19	490	67	2	4	75	150	4	12	35	18	19	102	1	42	4,637
Plymouth	77	187	1071	91	3849	429	306	3211	585	330	4222	268	210	453	466	1518	82	277	610	769	531	1570	95	230	41,833
Pontiac	36	212	1734	85	5137	427	300	3918	1086	408	3835	402	217	294	460	1887	168	176	921	542	587	2107	57	407	50,794
Reo	3	77	311	3	865	15	12	391	100	86	560	160	23	33	39	376	20	37	65	106	88	148	5	35	7,040
Studebaker	72	166	1973	50	5305	116	174	1977	323	346	2873	189	96	251	486	1044	127	100	310	619	275	1155	51	232	36,946
Stutz			16		62		1	31	6		17	1			4	5	2		2	1	5	7	1	2	385
Viking	6	4	123	4	316	7	9	108	31	16	124	1	3	19	31	42	11	6	10	35	12	51	2	14	1,798
Whippet	16	46	288	39	1172	162	203	1180	450	56	877	37	47	243	236	601	25	119	247	232	305	539	27	33	14,546
Willys	18	122	776	34	2875	136	203	2142	383	117	2232	175	30	256	249	793	29	106	338	328	418	983	32	46	23,819
Willys-Knight	17	46	678	26	1810	26	46	861	88	101	846	113	5	38	50	248	12	39	93	240	101	184	16	58	10,111
Windsor			15		50			24	10		157				9	10		3				2			641
Miscellaneous	1		66		258		5	66	12	12	71	5	1	2	7	55			24	2	3	61		39	1,350
State Totals	2333	7849	71467	4819	194413	21804	10145	115584	39165	16649	141272	11257	12486	13896	27468	83707	7784	6423	31693	27204	20638	55946	3465	13397	1,907,706

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THE NEW 1½ TON SPEED WAGON $625

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REO MOTOR CAR COMPANY, Lansing, Michigan ADN 98

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